



Lao PDR: Rural and Agriculture Sector Issues Paper

*Rural Development and Natural Resources Sector Unit
East Asia and Pacific Region
World Bank*

May 2006



Document of the World Bank

CURRENCY EQUIVALENTS

Currency Unit = Kip
US\$ 1 = 10,352.50 Kip
(Exchange Rate Effective April 1, 2006)

Government Fiscal Year

January 1 to December 31

ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
DAFO	District Agricultural and Forestry Offices
DOI	Department of Irrigation
DOL	Department of Lands, Ministry of Finance
FAO-CP	Food and Agriculture Organization – Cooperative Programme
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GOL	Government of Laos
GTZ	German Agency for Technical Cooperation
H5N1	Avian Influenza A
HYV	High Yielding Varieties
IFAD	International Fund for Agricultural Development
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
LECS III	Laos Expenditure and Consumption Survey III
MAF	Ministry of Agriculture and Forestry
MOF	Ministry of Finance
MOFA	Ministry of Foreign Affairs
NAFES	National Agriculture and Forestry Extension Service
NEM	New Economic Mechanism
NGO	Non-Government Organization
NGPES	National Growth and Poverty Eradication Strategy
PAFO	Provincial Agriculture and Forestry Offices
PFA	Production Forest Area
R&D	Research and Development
RTIP	Rural Transport Infrastructure Policy
SOE	State-Owned Enterprise
SPS	Sanitary and Phyto-Sanitary
TLUC	Temporary Land Use Certificate

Table of Contents

Currency Equivalents.....	ii
Acronyms and Abbreviations	ii
Executive Summary	v
I. Introduction.....	1
II. Agriculture and the Rural Landscape.....	2
<i>General Characteristics of Agriculture</i>	<i>2</i>
<i>Rural Poverty and Agricultural Linkages.....</i>	<i>5</i>
III. Recent Agriculture Performance	12
<i>Overall Performance</i>	<i>12</i>
<i>Trends in Use of Inputs</i>	<i>13</i>
IV. Agricultural Development – Constraints and Potentials.....	21
<i>Can Past High Agriculture Growth Rates be Sustained?</i>	<i>21</i>
<i>Lowland and Upland Agriculture are Likely to Respond Differently</i>	<i>26</i>
<i>Integrating Markets can Facilitate Growth and Moderate Spatial Differences</i>	<i>31</i>
<i>Deepening Agricultural Value Chains Will Expand Domestic Benefits</i>	<i>33</i>
<i>Trends and Issues in Public Expenditure Management</i>	<i>35</i>
V. Conclusions	40

Boxes

Box 1: Agro-ecological Zones in Lao PDR.....	4
Box 2: Land Tenure, Agricultural Development and Land Administration.....	28
Box 3: Uplands Agriculture– in a State of Transition	29
Box 4: Land and Agricultural Development in Upland Areas	31
Box 5: Contract Farming	34

Tables

Table 1 – Rural Poverty has Fallen Over 1993-2003.....	5
Table 2 – The Fall of Rural Poverty Differs Across Agro-ecological Zones	5
Table 3 – Poverty Incidence and Number of Poor: Non-Border and Border Districts.....	9
Table 4 – Rural Households’ Cash Income	10
Table 5 – Rural Households’ Rice & Livestock Sales.....	10
Table 6 – Ownership of Productive Assets by Rural Households	11
Table 7 – Total Agriculture and Sub-Sector Shares of GDP	12
Table 8 – Use of Irrigation and Production Inputs (% of Rural Households),	16
Table 9 – Structural Shift in Rice Harvested Area.....	17
Table 10 – Forest Cover and Change.....	19
Table 11 – Crop Cultivation by Land Coverage Across Agro-ecological Zones	23
Table 12 – Crop Cultivation (% From Arable Land), by Household Consumption Level.....	25
Table 13 – GDP, Total Budget, and Agricultural Budget (US\$ million)	36
Table 14 – Agricultural Budget: Capital and Recurrent Expenditures (US\$ million).....	36
Table 15 – Public Investments in Irrigation, 2001 – 2005, US\$ Millions.....	37
Table 16 – Department of Irrigation: Irrigation Investment Plan, 2001 – 2005	38
Table 17 – Medium-term Expenditure Plan 2006-2010 (US\$)	39

Figures

Figure 1 – Lao Agricultural Sector	12
Figure 2 – Agricultural Sub-Sector Growth Trends	13
Figure 3 – Crop Land Area and Productivity are Increasing	14
Figure 4 – Irrigation Coverage and Fertilizer Use: Agro-ecological Zones (2002/03)	14
Figure 5 – Agricultural Workers and Their Productivity are Increasing	15
Figure 6 – Lao PDR Fertilizer Use (= Imports), 1990-2002	15
Figure 7 – Lao Agricultural Land and Labor Productivity Growth, in Regional Perspective.....	16
Figure 8 – Sizeable Physical Productivity Improvement Potential	22
Figure 9 – Rice Yield Improvements are Driving Production Growth.....	23

Executive Summary

1. This Rural and Agriculture Sector Issues Paper undertaken by the World Bank assesses the past decade's agriculture sector growth and rural poverty reduction in Laos, and identifies issues that arise in sustaining broad-based agricultural growth in the future. The Government itself has made significant strides in putting in place the foundations of its rural and agriculture sector priorities through formal documents on strategy and policy. This present Paper does not aim for these documents' comprehensiveness but rather emphasizes emerging strategy and policy aspects which merit attention as Government implements and monitors its programs.

2. Along with benefiting from existing documents of Government, development organizations and academic analysts, this Paper also draws on reports undertaken by the World Bank in association with this Paper. These include an analysis of rural poverty trends, value chain assessment of five commodities (rice, coffee, maize, livestock, horticulture/fruit crops), analysis of sanitary and phytosanitary (SPS) needs and capacity constraints, exploration of agriculture sector (MAF) public expenditure issues, and background reports on commercial agriculture potential as well as legal, regulatory and policy status of the agricultural sector.

3. **Agriculture has grown at a robust 4.7 percent annually** averaged over the past decade. Growth has been fueled in large part by an expansion of land under cultivation (1.9 percent per year) and agricultural labor, and there are few immediate limits to this continuing. Moreover, measures of productivity are improving, based on increases from low levels of such inputs as improved seeds and fertilizers, but are substantially short of levels being achieved elsewhere, providing substantial scope for catch-up growth.

4. **Poverty in Laos is primarily rural.** As most recently measured (2003), about 4.25 million people lived in rural areas, with about 38 percent living below the poverty line, still high, but a dramatic improvement from 52 percent a decade earlier. Over this decade, more of the progress in rural poverty reduction occurred in the first half, but then slowing such that only one-third of the total reduction occurred in the last half. This slowing of poverty reduction is correlated with a slowing of agricultural growth and this observation is a primary motivation for this Paper and its central focus on opportunities available to Government for reinvigorating broad-based agricultural sector growth.

5. **The links between agriculture and rural poverty are best understood based on disaggregated agricultural systems.** Lao agriculture's two broad farming systems, the lowlands and uplands, are taken to a further level of six agro-ecological zones to capture the interdependence between the natural environment, agricultural production potential and rural poverty. The zones are the Mekong Corridor, the Central-Southern Highlands, the Vientiane Plain, the Bolovan Plateau, the Northern Highlands, and the Northern Lowlands.

6. Spatially, the level of rural poverty remains highest in the Central-Southern Highlands (50 percent) and Northern Highlands (46 percent), areas characterized by remoteness, mountainous terrain, and poor conditions for farming. Poverty is lower in the Mekong Corridor (40 percent) and Northern Lowlands (32 percent), where natural conditions for agriculture are generally better and irrigation most prevalent, and lowest in the Vientiane Plain (17 percent) where there are dynamic economic interactions with Vientiane Municipality.

7. **Recent drivers of rural poverty reduction differ across these regions.** The *Asian financial crisis* hit hardest in Lao regions most integrated with neighboring economies, especially the Vientiane Plain, which experienced an increase in rural poverty during this episode. In fact, over the past decade, *non-border districts* have accounted for the majority of the people moving out of poverty. Poverty reduction has been strong in Laos along the China/Myanmar border, responding to dynamic economic growth in southern China, demand for agricultural products as well as growing tourism. The greatest challenges persist in areas bordering Vietnam, home to a still large, and increasing, number of rural poor. Remoteness and inaccessibility on both sides of the border are preventing dynamics similar to those along the China border. More generally, the strong and continuous performance in poverty reduction in the Northern Highlands and Lowlands appears to be closely related to the *Government's focus on priority districts* in remote upland areas and emphasis on provision of public rural infrastructure.

8. **Agriculture's importance to rural households remains high because non-farm rural income opportunities remain limited.** Even marketing of agricultural products is not yet general across rural households, with about half of farming families selling livestock in a given year, and below a third of households selling rice, outside of households in the Vientiane Plain. In upland areas, non-timber forest products are generally a more important source of cash income for rural families than any cultivated crop or livestock.

9. **Improving rural producers' agricultural productivity and expanding their market orientation is constrained by their paucity of physical assets and human capital.** Ownership of productive assets is strongly correlated with road access, and is 70 percent higher for households with access to permanent roads compared with no road access. Land holdings vary considerably across production systems and household welfare level. But land is in general not scarce, and holding size is more a result of reliance and limits on family labor and animal traction for land preparation and low incentives for production expansion beyond family needs when market access is poor. Education is also very important with more years completed correlated with higher welfare levels and a higher share of agricultural output being marketed.

10. **Laos has the potential for continued the high rates of agricultural growth** that are key to continued reduction of rural poverty, and aiming for a 5-6 percent annual rate for the coming decade is reasonable. Achieving this will involve transitioning from past reliance on extensive growth to a future that will depend more on intensive sources of growth. Extensive growth, through the expansion of area and absorption of additional agricultural workers, is likely to continue, albeit at a slower pace. But this alone will not be adequate: it will not achieve the productivity gains upon which improvements in household welfare will be realized, and it will face gradually tightening environmental management constraints as agriculture encroaches on forest resources. Laos has considerable potential for agricultural intensification through catching up technologically, achieving higher farm yields, improving incentives for diversification, and through regional specialization. Intensification prospects are initially better in lowland areas, and managing and moderating disparities that risk emerging if uplands lag will be a particular challenge.

11. **Assisting rural producers manage risks involved with greater market orientation will be important,** and food security concerns will remain an important factor in household decision making. Household reliance on informal risk management options such as harvesting from

common property natural resources are likely to remain important and should be accommodated since development of alternative, formal market approaches to risk management will take time. Government can facilitate by continuing to prioritize rural road investments, by recognizing that household relocation can reduce traditional risk management options, and by focusing on national integration of rice markets which will improve food security and enable farming households to accelerate shifts to higher valued crops.

12. **Lowland and upland agriculture are likely to respond differently.** The lowland areas hold the most promise for the intensification, diversification and commercialization of agricultural production. As recognized by the seven key initiatives identified in the NGPES for lowland agricultural development, the improvement in rice production and diversification into other crops in lowland areas, require a structural shift towards market-oriented production and a leading role for the private sector, with limits to government policy or investment initiatives leading further gains.

13. While uplands areas are not yet as important as lowland areas, and pose special challenges, for delivering significant gains in agricultural growth, these areas are nevertheless important in the long term as suitable land becomes scarcer and lowland opportunities more fully exploited. It would be beneficial for Government to invest in further development of the adaptive research and appropriate extension in support of upland agriculture development, and building the capacity to adapt approaches to the biophysical and socio-cultural diversity of upland systems. Further, upland households' management of risks related to ensuring food security, in the face of remoteness and difficult market access, is an impediment to agricultural diversification and productivity innovations, and puts a premium on public rural transport programs.

14. The variability of upland swidden systems and their evolution need to be better understood, to enable the Government stance towards these agricultural practices to become better calibrated to the differences in sustainability and transitions that these swidden systems are undergoing. Livelihoods approaches to swidden agriculture transformation will succeed with different combinations in different locations with choices from a menu that includes tree crops, agro-pastoral systems, home gardens, fish ponds and mulch farming. With the diversity and complexity of upland agriculture, communities themselves will need to lead the process of determining how to best transform their livelihoods.

15. **Support for integration of markets, both domestic and external, can facilitate growth and help all Provinces participate in economic growth.** Further integration of domestic markets will benefit from continued attention to two areas. Development of the rural road network and its connection to the national transport system will be strengthened by Government interventions along the lines of the rural transport infrastructure policy currently being finalized. Assessment would also be timely of the need for a further reduction in policy interventions in markets, often initiated by sub-national governments through market monopoly arrangements with the State Food Enterprise. Regards external markets, opportunities continue to grow, and with tariffs already low, policy attention is rightly turning to non-tariff constraints such as sanitary and phyto-sanitary (SPS) regulation. The SPS action plan currently under development can assist with priority setting and capacity building in SPS management so as to focus on identifying and addressing constraints for the commodity value chains most sensitive to SPS requirements of external markets.

16. Measures to promote deepening of agricultural value chains will expand domestic benefits. Value chain assessments of Lao agricultural commodities, including those done on rice, coffee, maize and livestock for this Paper, are making apparent the various cost factors and institutional constraints that reduce the competitiveness of both traditional and newer products. Product-specific issues exist, but most agricultural value chains also face common constraints of poor physical infrastructure which affects transport access and costs, the weak regulatory frameworks and enforcement of contracts, limited capacity of extension and technical assistance services, poor access to and high costs of formal financial services, limited distribution networks for commercial provision of inputs, low technical levels of farm management, limited ability to contain risks of both flooding and drought, and sometimes disruptive government intervention in market. The most damaging outcome of these cross-cutting issues is a generalized under-investment in production and processing by the private sector. The unfavorable business environment in rural areas leaves Laos with underdeveloped value chains beyond the farm level, leaving Lao farmers with fewer market options, and the Lao economy with limited capacity for domestic transformation and value added of the primary commodities that it produces.

17. More effective public expenditure is essential to improve services and investments that are core responsibilities of the public sector in supporting rural producers. There are potentially high-impact areas for capacity building in the Ministry of Agriculture and Forestry that would contribute to more effective expenditure levels and expenditure management capacity. First, nearly 80 percent of public spending on agriculture occurs at the province and district level, but the information available on actual expenditure levels and uses is wholly inadequate for central authorities to be able to provide overall guidance of these towards national objectives. Second, donor-funding is substantial but mostly off-budget, further exacerbating the weakness of the expenditure information system that is essential to effective public spending management. Third, recurrent budgets are inadequate in relation to investment levels to assure operations and maintenance of the investment, particularly for irrigation. Other problems to overcome are the inadequacy of administrative budgets at sub-national levels to manage expanding investment responsibilities, and the high levels of arrears in the provinces on payment obligations to private contractors. Progress in addressing these fiscal structure and management constraints will strengthen the Ministry of Agriculture and Forestry's ability to make the case that it can accountably manage potential additional fiscal resources expected to flow in several more years from NT2 power sales, and on which sectoral allocation decisions remain to be made.

18. In summary, the key challenges for Government to improve its capacity to maintain high rates of agricultural growth combined with good distribution of this growth are:

- *Improving farmer productivity* – build knowledge to enable distinguishing upland swidden systems, and to assist calibration of Government policies on swidden agriculture transformation consistent with promotion of sustainable intensification.
- *Linking farmers to markets* – rural road development on the basis of the national strategy being finalized, risk management for upland households through adequate access to forests as a buffer, improved market information for farmers, encouragement of competition in domestic trade in farm products, and facilitation of contract farming.
- *Capturing value added opportunities* – partnering with the private sector to identify and address the main constraints in the rural investment climate facing agro-industry, but also developing and implementing adequate social and environmental safeguards to integrate as criteria in assessing commercial agriculture investments proposals.

- *Strengthening public expenditure performance* – integration of donor resources into the national budget, improvement of central authorities’ information on sub-national governments’ agricultural expenditures, adequate recurrent expenditure budgeting, control of arrears in the investment program, and greater efficiency in irrigation investment to permit resource reallocation to provision of public service provision including adaptive agricultural research and extension.

19. The Government is actively engaging donors to assist it to learn from its own experiences in charting the best way forward on this array issues. The Ministry of Agriculture and Forestry, with its expanded mandate to encompass rural development strategy, is coordinating the support of international partners on this learning process, and in early 2006 suggested a preliminary list of key areas collaborative analysis. The topics encompass irrigation, uplands development, agribusiness/market deepening and livestock, microfinance and biodiversity conservation. The World Bank supports this endeavor and is committed to bringing its experiences in Laos and elsewhere to the process. Based on the World Bank’s ongoing activities in Laos and the orientation of this Paper, topics on which it is most able to contribute are uplands, agribusiness and marketing (and rural investment climate more broadly) as well as biodiversity. It can also assist building into the assessments two related elements that are likely to be important: public expenditure management, and its context of decentralization, and also forestry including its relation to uplands and biodiversity management. Consultations with Government and other partners on this Paper are intended to help guide and focus the World Bank in its commitments to contribute to progress on these core development issues for Lao rural development.

I. Introduction

20. Lao People's Democratic Republic (Lao PDR) is a very rural country with about 77 percent of its population living in rural areas. A large majority of these people depends on farming and the use of natural resources for their livelihoods. The agricultural sector generates 48 percent of the GDP (2003) and provides employment to 80 percent of the work force but contributes only 5 percent of registered exports. The sector is dominated by smallholder farm families engaged mainly in subsistence production and, for the most part, with only a tenuous connection to the cash economy. Most of those employed in agriculture are self-employed or unpaid family workers in these near-subsistence production systems. The rural sector is dominated by agriculture (broadly defined to include crops, livestock, fisheries and forestry), the modernization of which is essential for growth and poverty reduction.

21. The objectives of this Rural and Agriculture Sector Issues Paper are to provide a brief interpretation of the past decade's performance on agriculture sector growth and rural poverty reduction of Lao PDR, and to present and explore what appear to be the main issues arising for the challenge of sustaining both agricultural growth and equitable rural outcomes.

22. These issues are mostly familiar and being grappled with by Government and its partners, but some new aspects and perspectives will be emphasized in this Paper. The Government itself has made significant strides in putting in place over some time the foundations of its rural and agriculture sector strategy. An earlier building block is the National Rural Development Program (1996-2000), approved by Government in 1998. The key strategic initiatives of the Program were the focal sites and their development plans and the promotion of stable agricultural practices to replace shifting cultivation. The Lao PDR Agriculture Strategy Study¹ (1998) led to the Government's Strategic Vision for the Agricultural Sector (1999), a draft World Bank/FAO-CP Review of the Rural Sector² (1999) and the Master Plan Study on Integrated Agricultural Development³ (2001).

23. The Government's recent articulation of agricultural and rural development strategy, developed from the Strategic Vision and the Master Plan, is contained in the National Growth and Poverty Eradication Strategy (NGPES) which has ambitious targets, an all-embracing poverty-focused agriculture and forestry development plan (with policy and investment priorities), and a community-driven rural development approach and focus on reduction of poverty in the poorest districts.. In addition, the NGPES establishes a district-based approach to poverty alleviation interventions and identifies a group of the poorest 47 Districts for first priority for the focus of activity. The Government recognizes in the NGPES the key importance of rural sector development if the momentum of poverty reduction is to be increased and the ambitious goals achieved. The key means identified in the NGPES for attainment of the long-term goal of sustained equitable economic growth and social development are:

- moving consistently towards a market-oriented economy
- building the needed infrastructure throughout the country, and

¹ Carried out with the support of consultants under ADB auspices.

² "Promoting Sustainable Rural Development" Report No. 99/068 CP-LAO, FAO/WB Cooperative Programme, November 1999. While not finalized, many of its findings and recommendations are echoed in later reports and studies and remain largely valid today.

³ Carried out in collaboration with JICA.

- improving the well-being of the people through greater food security, expansion of social services and environmental conservation, while enhancing the spiritual and cultural life of all Lao people.

24. In addition to the above, the Sixth National Socio-Economic Development Plan (2006-2010) is currently under preparation, and maintains a strong focus on poverty, articulating national objectives in terms more closely aligned with the Millenium Development Goals.

25. This Issues Paper draws heavily on existing documents of the Lao PDR Government, development organizations and academic analyses. It also benefits from various analytical reports undertaken in parallel by the World Bank. These latter include an analysis of rural poverty trends, an application of value chain analysis to five key commodities in Lao markets (rice, coffee, maize, livestock, horticulture/fruit crops), analysis of sanitary and phytosanitary (SPS) needs and capacity constraints conducted as part of a larger trade study⁴, initial work on agriculture sector (MAF) public expenditure done within a multi-sector review, and survey reports on commercial potential as well as legal, regulatory and policy status of the agricultural sector. The Issues Paper does not attempt to encompass all of these, some of which are ongoing, in the embrace of a strategy, but rather to extract the salient issues which appear most central to the core issues of accelerating agricultural sector growth with broad distributions of the benefits of this growth as these are the focus of Government's existing strategic frameworks for agriculture and the rural economy.

II. Agriculture and the Rural Landscape

General Characteristics of Agriculture

26. The agricultural sector (including crops, livestock and forestry) is one of the main pillars of the economy. About 77 percent of the population lives in the rural areas and most are near-subsistence farmers engaged in rice-based agriculture, the collection of forest products and livestock raising. The sector is dominated by low-productivity rice production and is characterized by low-level use of purchased inputs such as improved seeds/breeds and fertilizers. Most rice is consumed by the farm families that produce it, with less than 10 percent marketed. The principal structural characteristics are low level of input use, traditional production systems especially in the uplands, non-market orientation of production, predominantly household labor, and private land holdings.

27. Agriculture has grown strongly, at a 4.7 percent annual average over the past decade, and while its share of the national economy has declined from 61 to 48 percent over this period, production volumes continue to grow and provide inputs to value chains of processing and marketing which are partly captured in national growth statistics under other sectors. A large majority of the population depends on agriculture and the use of natural resources for its livelihood. More rapid growth in other sectors pushed the overall growth rate up to 5.7 percent, lead by manufacturing (11 percent annual growth) which expanded to 19.2 percent of the economy, mining (12 percent growth), trade (8.3 percent growth) and transport and communications (7 percent growth). While the high rate and rural location of poverty indicates that successful agricultural and rural growth are the foundations for further poverty reduction, it is clear that accelerating poverty reduction will depend largely on absorption of labor and job creation in other sectors, in combination with a slowing of current high population growth rates.

⁴ Diagnostic Trade and Integration Study

28. Most of the provinces of Lao PDR cover a variety of natural environments with implications for agricultural production conditions and the types of land use systems practiced. Administrative boundaries, such as provincial borders, generally do not coincide with ecological, climatic or topographical conditions, or elevation gradients.

29. In broad terms, there are two main farming systems in Laos: namely the lowland rain-fed and/or irrigated farming systems of the Mekong flood plains and its tributaries, and the upland swidden agriculture system. (A third, smaller system, is the cultivation of horticultural crops as well as coffee around the Bolovens Plateau in the south of the country.) Half (2.2 million people) of the population resides in lowland areas, about 30 percent (1.3 million) reside in the upland areas and the remaining population (800,000 million) are in areas of mixed upland and lowland.

30. Government has identified specific development initiatives for these two main systems and aims through these to reduce the disparities between the outcomes for households in the two. With the lowland rain-fed system, which accounts for some 300,000 to 400,000ha, land is used for traditional glutinous rain-fed rice during the wet season with the land left fallow and grazed during the dry season. Constraints to lowland rice production are: low soil fertility, moisture stress during critical periods of growth and/or inundation, poor seed quality, insect pests and rats, and low use of suitable HYV rice varieties. On the irrigated rice farms, which cover between 100,000 and 150,000 ha, the pattern is supplementary irrigated rice during the wet season followed by irrigated rice or, on an increasingly larger area, other high value vegetable crops during the dry season. It is these latter farms which show the greatest potential for the development of commercial farming.

31. The upland or mountain agricultural systems are based on shifting or swidden cultivation of upland rice on about 200,000 to 300,000 ha practiced by some 300,000 to 400,000 farmers. While it is generally recognized that these shifting cultivation systems can represent a stable form of agriculture particularly in low population density areas where land pressure is low and the fallow period long, recent government policy towards swidden cultivation has been to reduce or even eliminate the practice from the higher risk areas whilst stabilizing production, through the introduction of tree crops and/or more stable livestock production systems, on the higher risk areas. Recent developments in Laos in the rubber and coffee sectors, combined with an emerging potential for vegetable production, offer real prospects of introducing stable commercial agriculture to these upland areas as long as land management accommodates existing communities' land needs, whilst in the longer term, livestock offers great potential.

32. In addition to these two broad farming systems, and for the purposes of further analysis in this Issues Paper, it is also useful to have an additional layer of detail in terms of agro-ecological zones. Areas with similar ecological features can be aggregated to agro-ecological zones reflecting commonalities and differences in agricultural potential beyond provincial or districts borders. The perspective along agro-ecological zones is of particular relevance in Lao PDR, where subsistence agriculture is the main source of rural livelihoods; it allows capturing, to a certain extent, the interdependence between the natural environment, agricultural production potential and rural poverty, and provides a more useful frame for assessing the production potential for agriculture and opportunities for poverty reduction than a perspective along administrative units.

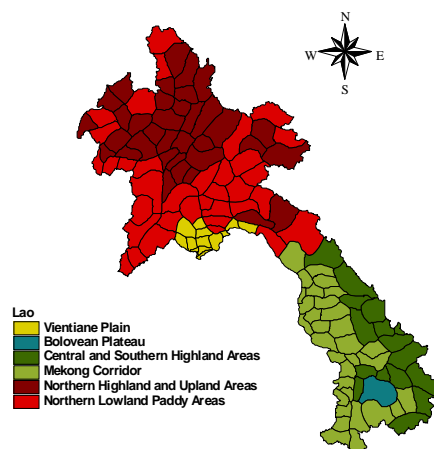
33. Lao PDR's rural landscape is characterized by six major agro-ecological zones: (a) Mekong Corridor; (b) Central-Southern Highlands; (c) Vientiane Plain; (d) Bolovan Plateau; (e)

Northern Highlands; and (f) Northern Lowlands. The dominant agricultural and rural economy features of each zone are described in Box 1.

Box 1: Agro-ecological Zones in Lao PDR

Mekong Corridor: The Mekong Corridor includes the banks and floodplains of the Mekong River and the lower alluvial valleys of its tributaries. Altitudes range from 100-200 meters, annual rainfall is between 1,500-2,000 millimeters, and the agricultural growth period ranges from 180-200 days. The landscape consists mainly of plain to modestly sloping areas. The original lowland forest cover has long been removed for intensive farming as the area is well suited for a wide range of crops, particularly lowland rice. The total rural population in the Mekong Corridor is about 1.5 million people making it the most densely populated area in Laos.

Central-Southern Highlands: This zone includes parts of Khammouane, Savannakhet, Saravane, Sekong and Attapeu provinces and extends parallel to the Mekong covering the upper valleys of its tributaries and upland areas. Altitude range varies from 200-500 meters. Rainfall ranges from 2,000-3,000 mm and the length of growth period is between 210-240 days. The zone is generally characterized by poor acid soils with little potential for productive agriculture. In addition, the high risk of unexploded ordnance (UXO) prevents the cultivation of a large portion of the available land. The rural population is estimated at around 300,000 people. Population density is low with less than 15 people per square kilometer.



Vientiane Plain: The Vientiane Plain extends over parts of Vientiane, Bolikhamxay and Khammouane provinces and covers the higher plains and lower slopes in the areas. Altitude ranges from 500-1000 meters and annual rainfall from 2,500-3,000 mm. The growth period is 240-270 days. The landform is dominated by rolling topography and middle mountain areas. Natural forests still exist but have been affected by shifting cultivation. Upland rice cultivation is one of the main agricultural activities but animal husbandry is also of some importance. The total rural population is approximately 300,000 people with low to medium population density.

Bolovan Plateau: This zone includes parts of Saravane, Sekong, and Attapeu provinces in the south of the country. Altitude varies from 500-1,500 meters and rainfall ranges from 2,500-3,000 mm. Today's natural vegetation mainly consists of savannah, forest and

grassland formations. Land is primarily used for cultivation of tree crops (coffee, tea and cardamom) but some shifting cultivation for upland rice production occurs as well. Livestock production is of major importance in this area. The total rural population is estimated to be around 60,000 people.

Northern Highland Areas: This zone covers the mountain areas of Phongsaly, Luangnamtha and Bokeo in the extreme northwest, parts of Huaphanh and Xiengkhuang and eastern parts of Bolikhamxay. Altitude varies from 1,500-2,500 meters and annual rainfall ranges from 1,300-2,500 mm. The zone is characterized by remoteness, inaccessibility and high erosion risk due to the steep mountainous topography. However, soils are well suited for farming and there is good potential for animal husbandry. Natural forests have been largely removed and shifting cultivation is the predominant land use. The total rural population is approximately 1,000,000 people, however, overall population density is still low.

Northern Lowlands: This area comprises parts of Luang Prabang, Phongsaly, Oudomaxay and Xayabury. Altitude ranges from 500-1,500 meters and annual rainfall ranges from 1,500-2,000 mm. The landforms in this zone are predominantly mountainous and similar to those in the Northern Highlands. The original natural forests have been removed and remaining forests are largely shaped by shifting cultivation and livestock grazing. The total rural population in this zone is estimated at about one million people but population density is higher than in the Northern Highlands.

Rural Poverty and Agricultural Linkages

Overall Poverty Trends

34. Poverty in Laos is primarily a rural phenomenon. In 2003, about 4.25 million people lived in rural areas, with about 38 percent living below the poverty line (Table 1)⁵. This remains a high level of poverty, but represents a dramatic improvement over the 52 percent of the rural population living in poverty a decade earlier. Nonetheless, further reducing the existing elevated level is a clear focus of the GOL, which has set a target of eliminating mass poverty by the year 2010.

Table 1 – Rural Poverty has Fallen Over 1993-2003

	1992/93	1997/98	2002/03
Rural Poverty, Headcount	51.8	42.5	37.6
Rural Poverty, '000	1,768	1,799	1,599

Source: LECS III

35. The recent pattern of poverty reduction indicates that achieving this target presents a considerable challenge, for a number of reasons. First, most of the past decade's progress in rural poverty reduction occurred in the first half, with progress slowing such that only one-third of the total reduction occurred in the last half of the past decade. This slowing of poverty reduction in the second five-year period is correlated with a slowing of agricultural growth, and emphasizes the importance of Government efforts to strengthen broad-based sector performance as a key component of overall economic strategy.

Table 2 – The Fall of Rural Poverty Differs Across Agro-ecological Zones

		1992/3	1997/8	2002/3
Mekong Corridor	number of poor	745,952	654,067	603,127
	poverty head-count	55.2	42.4	39.8
Central-South Highlands	number of poor	94,346	147,817	154,509
	poverty head-count	52.1	53.9	49.7
Vientiane Plain	number of poor	118,956	54,008	48,547
	poverty head-count	34.8	13.9	16.6
Northern Highlands	number of poor	460,769	522,899	476,065
	poverty head-count	61.1	53.8	45.5
Northern Lowlands	number of poor	385,873	415,073	329,100
	poverty head-count	50.9	41.0	32.2

Source: LECS III

* Due to the small LECS III survey sample size for the Boloven Plateau, poverty results are not representative for this region and not reported.

36. The most recent household survey (Laos Expenditure and Consumption Survey III - LECS III, 2003) reveals (Table 2) that the level of rural poverty remains highest in the Central-Southern Highlands (50 percent) and Northern Highlands (46 percent). Both areas are characterized by remoteness, mountainous terrain, and poor conditions for farming, including poor acid soils in the Central-Southern Highlands and steep slopes and high erosion risk in the Northern Highlands. Poverty is lower in the Mekong Corridor (40 percent) and Northern Lowlands (32 percent), where natural conditions for agriculture are generally better and where most of the country's irrigation infrastructure is situated. Poverty incidence was lowest in the Vientiane Plain

⁵ For a more detailed treatment of rural poverty in Lao PDR see: *Lao PDR: Rural Poverty – Trends and Profile. Background Paper for the Lao PDR Poverty Assessment*. 2005.

(17 percent), which is one of the most developed areas in Laos, characterized by dynamic economic interactions between the urban environment of Vientiane Municipality and the adjacent rural areas.

37. Second, in absolute terms, most of the rural poor resided in the densely populated Mekong Corridor (more than 603,000), followed by the Northern Highlands (476,000) and the Northern Lowlands (329,000). Much smaller numbers of poor were residing in the sparsely populated Central-Southern Highlands (155,000 people) and, particularly, in the Vientiane Plain with less than 50,000 people below the poverty line.

38. Third, the decade's decrease was uneven across the country, quickest in the Vientiane Plain (through 1997) and Northern Lowlands, slower in the Northern Highlands and Mekong Corridor, and only minimal in the Central-Southern Highlands.

39. The poverty reduction was strongest in absolute numbers in the Mekong Corridor with a reduction in the total number of rural poor of more than 140,000, in the Vientiane Plain with a reduction of about 70,000, and in the Northern Lowlands with a reduction of about 56,000 over the ten years period. The number of poor increased by more than 60,000 in the Central-Southern Highlands and remained nearly stable in the Northern Highlands during the decade. Overall, the Northern Highlands and Northern Lowlands compare most favorable in terms of continued decrease in poverty incidence across agro-ecological zones.

Principal Drivers of Rural Poverty Reduction Differed across Regions

40. The past decade was punctuated mid-period by the financial crisis that hit the region. The economic performance that underpinned this earlier 1992/93-1997/98 period's strong performance on poverty reduction was still benefiting from the 1986 decision to introduce the market-oriented reforms of the New Economic Mechanism (NEM). The program was not fully implemented until around 1990, with rural sector activity benefiting from removal of controls on prices and quantities, relaxation of restrictions on international trade, legalization of private marketing of agricultural inputs and commodities, reduction in state-owned enterprises (SOE) monopolies in commodity procurement, and encouragement of private enterprise, including foreign direct investment (FDI). The agricultural sector grew strongly (see para. 43), but not uniformly across sub-sectors, with forestry growing most rapidly followed by livestock, fisheries and cash crops, while staple food output – rice, corn and starchy roots - growing more slowly. This suggests that farmers responded to the opening market opportunities by beginning to shift production resources from staple foods to cash crops.

41. The currency crisis in Thailand in 1997 and the ensuing economic blow to the region's economies affected Laos as well. The currency suffered a large nominal devaluation, with monetary and fiscal accommodation contributing to inflation that soared over 100 percent, and economic growth slowed but remained above 4 percent. Part of the fiscal expansion financed a rapid increase in pump-based irrigation (equivalent to 5 percent of GDP in 1998 alone), which contributed for several years to a significant increase in capacity for dry season rice production, and was a Government response to the earlier 1990s' shift by farmers away from rice as more profitable crop alternatives became available. Farmers were also confronted over the 1997/98-2002/03 period with domestic prices that reflected the international market softening of agricultural commodity prices, most strikingly for coffee and rice.

42. Interestingly, the region of Laos that is most closely tied to the broader regional economy, the Vientiane Plain, was hit hardest by the regional financial crisis and slowing economies of neighboring countries. While the Vientiane Plain experienced a strong decrease in poverty incidence during 1992/93-1997/98, and reached as low as 14 percent, the trend reversed with the financial crisis, with poverty increasing to 17 percent when measured five years later. The Asian financial crisis hit hardest where regional integration was greatest, and this increase represents an increased vulnerability to external shocks in this particular area.

43. A somewhat less drastic slowdown in poverty reduction also took place in the Mekong Corridor. In the Central-Southern Highlands poverty increased slightly at an annual rate of 0.7 percent with increasing population during the first sub-period but decreased by 1.7 percent during the second sub-period.

44. Over the decade, poverty incidence as well as poverty gap and severity decreased steadily in the Northern Highlands and Northern Lowlands. The strong and continuous performance in poverty reduction appears to be closely related to the GOL's focus on remote upland areas and a shift in public rural investment programs toward rural infrastructure construction, particularly roads and irrigation infrastructure. It is estimated that during the late 1990s, more than three quarters of expenditure on irrigation have been for capital investments. While these investments were financed through fiscal deficits that proved unsound from a macro-economic perspective and contributed to high inflation and budget deficits during the late nineties, these have not been bad investments. Particularly, the GOL's district targeting for priority investments appears to have been effective. Poverty incidence and number of poor in first priority districts, of which the majority is located in the Northern Lowlands and Highlands, decreased markedly. Moreover, poverty gap and severity decreased even faster than poverty incidence, indicating that the government's programs have also been effective in reaching the poorer segments of the poor.

45. The temporal variations in poverty reduction performance across agro-ecological zones are noteworthy and appear to be closely related to a shift in public and donor development programs. During the 1990s, rural infrastructure investments, such as roads and irrigation infrastructure were primarily directed into high potential agricultural areas in the lowlands and along the Mekong Corridor. These areas have seen the largest gains in productivity improvements. As a result of these investments, the agricultural production systems in these areas were gradually transformed from subsistence to a low level of commercialization, which is reflected in the decreasing poverty during the first sub-period.⁶

46. In the early 2000s, the Government shifted its public investment programs more towards the Northern Highlands, Northern Lowlands and Central-Southern Highlands. Donors followed the Government's lead and increasingly directed their assistance to these areas as well. The shift in public and donor-funded investments and the steady increase of the number of rural households participating in any kind of development projects are closely correlated to strong poverty reduction performance in the Northern Highlands and Northern Lowlands during the second half-period.

⁶ It is estimated that for the period 1997/8 to 2002/3 about one-eighth of the reduction in rural poverty came from the improvement in road access, which mainly took the form of providing wet-weather access to areas that already had dry-season access. There is a similar return in terms of poverty reduction to providing dry season road access to the most isolated households, those with no road at all, which make up over 30 percent of rural households and are being left behind in the development of the rural economy (Warr, 2005).

47. As a result of infrastructure investments, many remote areas which were inaccessible before in the uplands were better linked to markets and social services. This may have further contributed to growth in these areas, especially given previously low levels of market integration. However, the growth momentum brought by improved infrastructure appears to have been exhausted more quickly in the Central-Southern Highlands where poverty reduction performance was weak during the second sub-period.

Rural Migration – Reacting to Economic Incentives

48. Data on rural migration are only slowly becoming available, but anecdotal evidence indicates that urbanization and economic deepening as seen in Vientiane Municipality, Savannakhet, Pakse, Thakek and Luang Prabang are driving rural-to-urban and upland-to-lowland migration. Such migration may be contributing to the relatively rapid poverty decline in Northern and highland areas. Migration may be triggered by improved infrastructure access but also by the Government's rural development policies including stabilization of shifting cultivation, land reallocation, focal site development, and opium eradication. These policies primarily promote the reduction of traditional rotational cultivation practices, consolidation of farming into three land plots per household, development of rural infrastructure and public services in focal sites. Strong rural population growth during the last decade may have further exacerbated the effect of these policies through putting additional pressures on limited land resources. Opium eradication policy, which is enforced relatively stringently, has wiped out income sources for many remote upland communities without offering them any viable livelihood alternatives. These policies may have increased vulnerabilities of rural poor who may have been forced to migrate to lowland areas in search of better livelihoods.

49. Low levels of formal education and ethnic differences are impediments to rural people considering migration. Thus, while internal migration is often from upland to lowland, there also appears to be a more substantial migration out of Laos from richer flood-prone lowlands than from poorer drought-prone areas, with the former communities, along the Mekong, better connected to the broader economy. A Government survey in 2003 of migration by household members in Khammuoane, Savannakhet and Champassack found a high rate of migration, reaching nearly 7 percent of the sample population, with about 80 percent of these migrating beyond Lao borders, mainly Thailand. Moreover, nearly three-quarters of all migrations in this sample population had occurred recently – within 3 three years, suggesting an acceleration of migration.

Border Districts and the Poverty Impact of Cross-border Market Integration

50. The Lao rural economy is opening up to and beginning to benefit from trade with dynamic cross-border markets. There is much anecdotal evidence that economic growth has been the result of locally dynamic but often unrecorded informal trade. Similarly, cross-border contract farming and commercial plantations, financed by foreign or domestic agro-businesses, are likely to be contributing to local economic activity. The impacts in terms of poverty reduction can be assessed by looking at trends in border districts, depending on whether they border China/Myanmar, Vietnam, or Thailand, as compared with districts in the interior of Laos.⁷ The potential is that border districts of Laos may show stronger economic activity than non-border districts based on better integration into the regional economy.

⁷ Laos shares a common border of nearly 400 km with China and Myanmar, about 1800 km with Thailand, some 2000 km with Vietnam, and over 200 km with Cambodia.

51. The poverty incidence remains lowest in districts along the Thai border (Table 3). However, poverty reduction has been modest over the past decade as economic ties across the Mekong have long been established and common language and traditions are strong forces that have long connected both river banks. It appears that no major incremental gains can be expected here.

Table 3 — Poverty Incidence and Number of Poor: Non-Border and Border Districts

	1992/93		1997/98		2002/03	
	Number of Poor	Poverty Headcount	Number of Poor	Poverty Headcount	Number of Poor	Poverty Headcount
Non-border districts	1,005,724	54.87	906,960	42.11	794,817	37.41
Border Districts						
Thailand	291,071	35.78	343,202	30.51	272,008	24.25
Vietnam	309,229	58.42	392,499	66.49	417,726	62.47
China-Myanmar	57,995	65.32	62,795	47.95	36,502	26.26
Cambodia	102,600	68.13	93,722	39.35	78,467	39.78

Source: LECS III

52. Incremental impacts on poverty incidence have been strong along the China/Myanmar border starting in the late 1990s. Dynamic economic growth in southern China, demand for agricultural products as well as growing tourism, are apparently emerging as important growth factors for northern Laos. They can be expected to continue into the future in line with strong growth prospects for China. However, population levels and absolute numbers of poor are low in the immediate border regions with China and total incremental impacts on the number of poor will be low if these spill-over effects are confined to the border areas.

53. The greatest challenges persist along the Vietnamese border where a still large number of poor reside. The number of rural poor has been steadily increasing over the past ten years and there have been few cross-border impulses to set self-sustaining economic dynamics in motion. Remoteness and inaccessibility on both sides of the border are preventing dynamics similar to those along the Thai and China borders, and unexploded ordinance are also a constraint. However, changes are expected in the future with significant growth and poverty reduction opportunities. Vietnam continues to make progress on bringing road infrastructure into its Central Highlands and linking these areas to coastal ports and city centers. The implication for Laos will be to ensure that infrastructure and basic services are in place to benefit from this integration and gain access to cross-border markets.

54. Despite some growth momentum developing in border areas, particularly with China, the major reduction in the number of poor has been in non-border districts and the majority of people moving out of poverty (210,000) during the last decade was living in non-border districts.

Direct Linkages between Agriculture and Poverty

55. Rural livelihoods in Laos depend mostly on subsistence farming, and rural poverty incidence is strongly correlated with geography and the natural environment that both determine agricultural production conditions and the types of land use systems practiced.

Table 4 – Rural Households' Cash Income

	Share of Households Earning Cash Income
Rural Laos	39
Vientiane Plain	67
Mekong Corridor	42
Central-Southern Highlands	39
Northern Lowlands	38
Northern Highlands	23

Source: LECS III

Vientiane (70), Sekong (66) and Champassack (58) provinces, while much lower in Saysomboun (6), Phongsaly (6) and Saravane (14).

57. Moreover, the level of participation in markets for the commercialization of agricultural products by households is quite low. Rural households participate in markets for sales of livestock more than for rice, reaching above half of households in the North (Table 5). Rice marketing is considerably lower, particularly in the Central-Southern highlands, but scarcely above a third of households with the exception of households in the Vientiane Plain. Additional marketing

Table 5 – Rural Households' Rice & Livestock Sales

	Share of Rural Households Selling:	
	Rice	Livestock
Vientiane Plain	48	40
Mekong Corridor	37	50
Central-Southern Highlands	14	47
Northern Lowlands	26	55
Northern Highlands	28	57

Source: LECS III

activities are engaged in by rural households for non-timber forest products (NTFP). Separate studies show that NTFPs can often be a more important source of cash income for families – as much as 50 percent or more of total cash income – than livestock of crops (Foppes, 2003). In addition, rural women often supplement household cash income through production and marketing of handicrafts.

58. Ownership of productive assets for agriculture differs substantially across poor and better off rural households. While nearly every rural household has basic tools, ownership of more sophisticated assets such as machinery, special agricultural structures and storage facilities other than traditional grain storage sheds is generally low, but nonetheless varies considerably by wealth, particularly two-wheel tractors, and boats (Table 6). Ownership of productive assets also varies with agro-ecological zones, tending to decrease toward the more remote upland agro-ecological zones, such as the Central Southern Highlands, Northern Highlands and Northern Lowlands. In monetary terms, the total value of household productive assets averaged about Kip1.9 million over Laos (rural households) but was lowest in the Northern Highlands and Central Southern Highlands at roughly half the national average. The value of total productive assets was highest among rural households in the Vientiane Plain amounting to 2.3 times the national average. Ownership of productive assets is also clearly correlated with household access to road infrastructure. The value of household assets was about 70 percent higher for households with permanent road access as compared to households with no road access.

56. The welfare of rural households remains tightly linked to the outcome of their agricultural activities. The level of diversification of rural household incomes remains low, and the ability to generate cash income from wage sources remains limited. In 2002/03, only 39 percent of rural households were able to generate such cash income, scarcely more than half the level of urban households (Table 4). Opportunities to generate cash incomes are closely related to the proximity of urban areas. The proportion of cash income generating households is highest in

58. Ownership of productive assets for agriculture differs substantially across poor and better off rural households. While nearly every rural household has basic tools, ownership of more sophisticated assets such as machinery, special agricultural structures and storage facilities other than traditional grain storage sheds is generally low, but nonetheless varies considerably by wealth, particularly two-wheel tractors, and boats (Table 6). Ownership of productive assets also varies with agro-ecological zones, tending to decrease toward the more remote upland agro-ecological zones, such as the Central Southern Highlands, Northern Highlands and Northern Lowlands. In monetary terms, the total value of household productive assets averaged about Kip1.9 million over Laos (rural households) but was lowest in the Northern Highlands and Central Southern Highlands at roughly half the national average. The value of total productive assets was highest among rural households in the Vientiane Plain amounting to 2.3 times the national average. Ownership of productive assets is also clearly correlated with household access to road infrastructure. The value of household assets was about 70 percent higher for households with permanent road access as compared to households with no road access.

59. Land holdings differ more pronouncedly across agro-ecological zones, with larger average landholdings occurring in the fertile areas of the Vientiane Plain (2.3 hectares), and Mekong Corridor (2.0 hectares) and smaller landholdings in the Northern Lowlands (1.6 hectares), Northern Highlands (1.7 hectares), and Central and Southern Highlands (1.8 hectares). Less steep terrain combined with better accessibility to household land holdings due to better infrastructure explains the higher amounts cultivated land in the lowland areas as compared to the highlands. This also reaffirms that land is not yet constrained as population densities tend to be significantly higher in the lowlands.

Table 6 - Ownership of Productive Assets by Rural Households

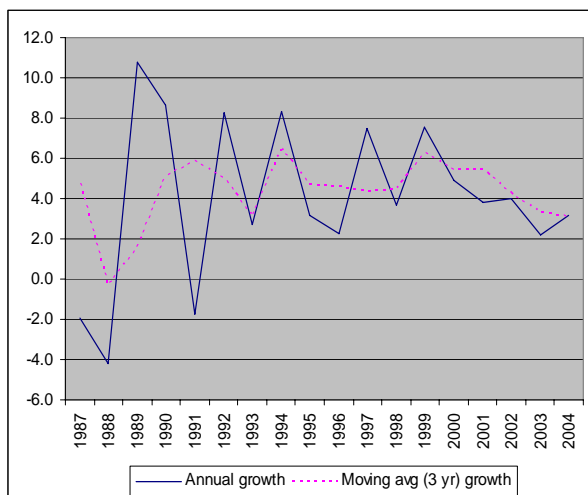
	Total Operated Land (ha)	Agricultural Building	Tractor (2-wheel)	Tractor (4-wheel)	Boat	Fish Net	Agric. Equip.	Value Agric. Equipment ('000 Kip)
	(percent of rural households)							
Rural Laos	1.85	4.9	16.9	4.3	18.4	65.8	97.4	1,901
By Agro-Ecological Zone								
Mekong Corridor	2.00	2.1	18.6	3.2	34.3	76.3	98.7	2,163
C/S Highlands	1.85	8.2	8.8	4.5	4.5	64.1	95.8	1,066
Vient. Plain	2.29	16.8	36.2	9.1	24.6	71.7	94.4	4,371
North. Highlands	1.59	2.9	7.2	2.9	9.2	54.3	97.8	734
North. Lowlands	1.62	4.6	21.6	4.7	9.0	60.3	96.3	2,185
By Consumption Quintiles								
Quintile I	1.68	4.2	7.9	2.6	13.0	61.9	97.3	857
Quintile II	1.70	4.1	14.2	3.7	17.3	65.7	97.8	1,420
Quintile III	1.83	5.2	17.1	4.0	19.6	66.1	97.4	1,966
Quintile IV	2.03	5.1	21.9	4.2	20.0	68.5	97.2	2,425
Quintile V	2.15	6.1	25.8	7.9	23.2	67.3	97.3	3,145

Source: LECS III

60. Across poverty categories, the size of land holdings differs more strongly. However, as most of the poor households are situated in the highland mountain areas, these differences are a reflection of the disadvantage of the topographical conditions of the areas in which the majority of the poor reside. The determinants of rural growth appear to be more closely related to quality of land, infrastructure access and access to markets than actual size of household land holdings. Land resource availability and road access also point in this direction. Areas of poor road infrastructure are often located in mountainous areas, where steep terrain prevents large the emergence of larger land holdings.

61. Human capital is important, in addition to physical assets. Evidence from households' socio-economic characteristics link agricultural productivity to educational levels. More education of rural heads of households, in particular, is correlated with higher welfare levels of their family as well as higher share of agricultural output that the household markets. However, women's education will also be important. With their important role in the agricultural labor force, the ability to access public services and new production techniques, as well as engage in marketing, is constrained by illiteracy and innumeracy. Given the low adult literacy and primary school completion rates in Lao PDR, it is likely that improvements in the overall educational level of the population could have an impact in agricultural productivity and rural livelihoods.

Figure 1 – Lao Agricultural Sector



Source: FAOSTAT

worrying that growth has trended downwards since 1999 and has now for several years been below the NGPES target level for growth in agricultural output of 4.5 percent annually (Figure 1). While caution should be exercised against reading too much into short term trends in the agricultural sector, this softening of sector growth since the start of the decade merits close monitoring to disentangle domestic causes from external factors. These latter have included the region-wide financial crisis that affected external demand for Lao products for several years over 1999-2001, the general decline in world agricultural commodity prices over this period, and a number of years with drought conditions. With a return of robust growth in neighboring countries, and recovery of commodity prices, attention to Lao agricultural growth needs to focus on domestic factors and policy impacts.

Table 7 – Total Agriculture and Sub-Sector Shares of GDP

	All Agriculture	Crops	Livestock and Fisheries
2003	48	28	17
2000	52	31	18
1990	61	37	21

Source: IMF

III. Recent Agriculture Performance

Overall Performance

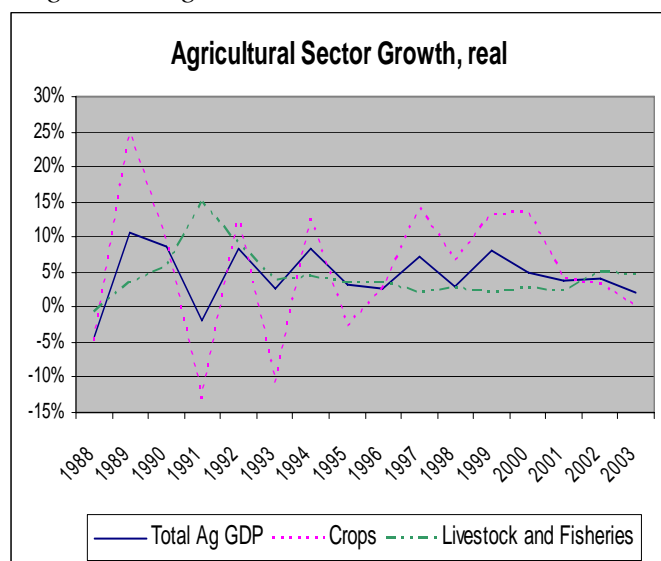
62. Based on national accounts data, agricultural sector growth over the ten-year period was an average of 4.7 percent per year and, adjusted for population growth, about 2.2 percent on a *per capita* basis. Growth was 4.9 percent per year over 1994-98, and 4.6 percent per year over 1999-2003, sufficiently comparable that growth in these two periods in itself would not appear to underpin different poverty reduction results. This recent history of agricultural growth compares favorably with countries in the region and others at similar stages of development, but it is

63. Accentuated by this recent softening of agricultural sector growth, the share of the sector in the overall economy has continued its secular decline (Table 7) and by 2003 had shrunk to 48 percent from 61 percent in 1990. The crops sub-sector share fell from 37 to 28 percent, and the livestock and fisheries sectors (combined) from 21 to 17 percent, over the same period.

64. The growth of agricultural output, and particularly of cash crop and livestock production, in the post-reform period has been the result of five main factors: (a) increased domestic demand resulting from population growth of 53 percent between 1986-2003 and the impact on incomes of economic growth; (b) reforms that reduced the barriers to domestic trade and, as a result, allowed comparative advantage in cash crops and livestock production to be exploited to a certain degree and the need for rice self-sufficiency declined: improvements in transport infrastructure reinforced the effects of the policy changes; (c) the restoration of good relations with Thailand improved cross-border trade, which has also grown substantially with China and Vietnam. The total registered trade of Laos in all products with its three principal neighbors grew massively between

1986-2003; in 2003, agriculture had only a 5 percent share in registered exports but the sector's unregistered trade is believed to be very significantly higher; (d) administrative barriers in Laos to international trade were reduced, in particular to trade with China and Thailand, allowing farmers to respond to market opportunities created; and (e) strong economic growth in China, Vietnam and Thailand exercised a "demand-pull" effect.

Figure 2 – Agricultural Sub-Sector Growth Trends



Source: IMF

65. To put Lao agricultural growth potential in cross-country perspective, from the past decade's growth of the sector of 4.7 percent annually, what improvement might be achievable? A quick survey of regional experience is helpful in giving some sense of what upper bounds of long term growth performance might be. Taking ten year averages of sector growth, over the 1964-2004 period, there are only four cases of countries in the region maintaining growth above 5 percent for a decade or more: Thailand (5.2 percent, ending in 1978), Malaysia (5.0 percent, ending in 1982), China (for over 16 years, peaking at 6.2 percent, ending in 1990), and Laos (5.2 percent, ending in 2001). Shortening the period

of growth averaging to five years brings several additional countries – Indonesia and Korea – into the high-growth group, and includes more periods approaching 6 percent average rates of sector growth. In brief, Lao PDR's neighbors, in periods of the most favorable circumstances within the past forty years, have managed at most to sustain annual sector growth rates in the 5-6 percent range over 5-10 year periods, before falling back to more moderate rates of growth. The stretch target for Laos, then, within the broader perspective of overall economic growth, would be an agricultural sector growing at 5-6 percent annually.

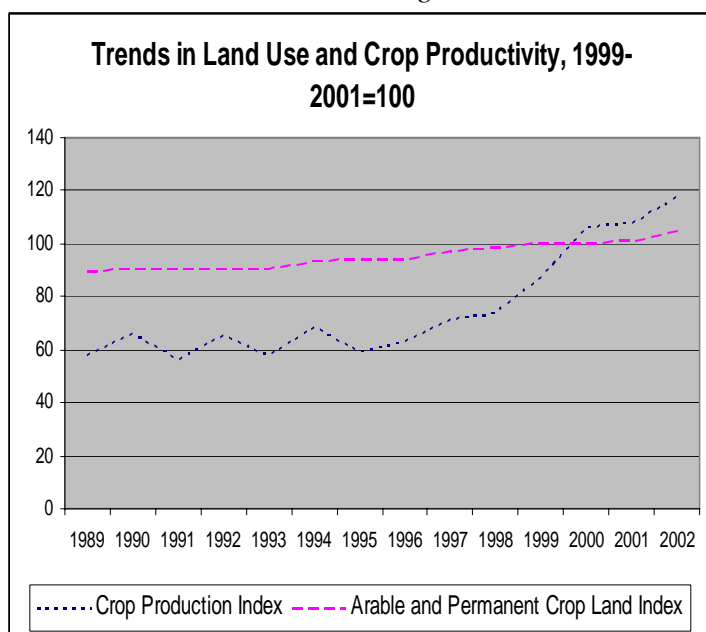
Trends in Use of Inputs

66. The growth performance of the agricultural sector has built upon a balanced combination of increasing factor input use, including both land and labor, as well as beginning intensification of purchased input use, such as fertilizer, albeit from very low levels since the mid-1990s.

67. **Land use is expanding.** Since 1976, the cultivated area has increased at an average of 1.9 percent per year, although this masks major differences over time; the area cultivated expanded rapidly from 1976-1981 but in 1983 began a decline, stabilized by the early 1990s, and thereafter began a new phase of expansion (Figure 3).

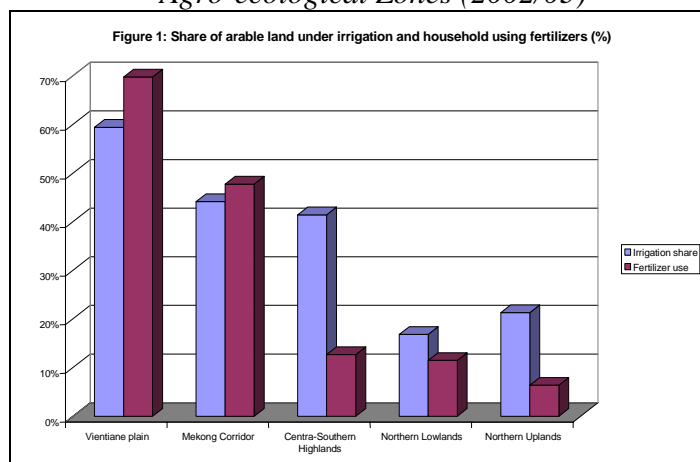
68. Low population densities remain a major feature at the national level, although there are differences spatially. In lowland areas of the Mekong corridor, density per arable land area is much higher than the national average, resulting in lowland farmers increasingly expanding to upland areas to cultivate fruit trees and fast growing species of forest trees. Population densities are lower in the upland districts. Among the 46 priority districts identified in the NGPES, 41 percent have a population density of between 1 and 10 inhabitants per km² and 41 percent between

Figure 3 – Crop Land Area and Productivity are Increasing



Source: FAOSTAT

Figure 4 - Irrigation Coverage and Fertilizer Use: Agro-ecological Zones (2002/03)



Source: LECS III

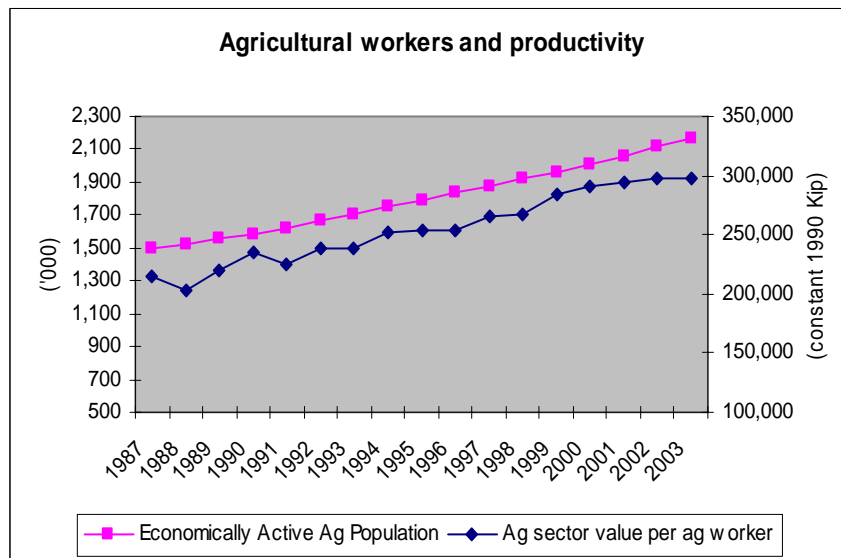
11 and 20. At population densities around 10 inhabitants per km², there is little population pressure that would induce a need for change in the traditional land use systems.

69. However, the population growth rate of 2.4 percent is high, and there is a strong trend of migration to roads and valleys, due to voluntary moves towards areas perceived as more favorable and in response to public services provision in parallel with the government's village consolidation efforts, when these are adequately funded and implemented. This is creating pockets with higher population densities inside most upland districts and provinces in which land use systems show a trend towards intensification. Farmers are adjusting to shortened rotations in their shifting cultivation systems. The use of herbicides on upland rice has started, and cultivation of upland rice is evolving in some areas towards a rotation with maize, and sometimes cassava, grown after upland rice. These are important changes in the long-term transition from traditional shifting cultivation to more intensive rotations, but with as yet unclear outcomes sustainability of agricultural productivity gains, or regards wider environmental impacts in these often fragile ecosystems.

70. Land for agricultural production is being developed through irrigation investments. Irrigated land has almost doubled over the past decade, largely through public investments. A major benefit has been the increase in dry season irrigation which has permitted an increase in national rice production in this off season, thereby reducing seasonal price fluctuations and improving national rice security. Most irrigation schemes are small scale and village-based, and Government is doing well to focus on these.

71. Irrigation development is concentrated by topography to three areas: the Vientiane Plain, the major plain along the Mekong River, and the northern mountainous area (Figure 4).

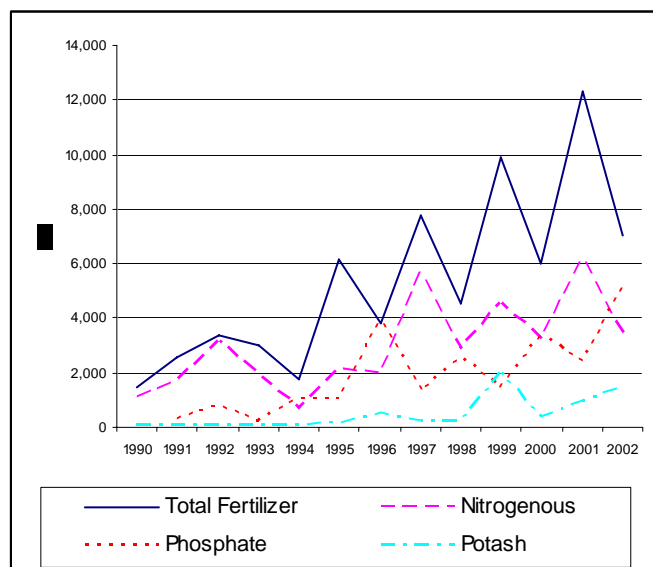
Figure 5 – Agricultural Workers and Their Productivity are Increasing



Source: FAOSTAT

fisheries provide the primary sources of employment for 86 percent of the working population countrywide, and 93 percent in rural areas (1995). In rural areas, 91 percent of those employed are involved in agricultural production, 2 percent in agricultural marketing, and 7 percent in non-agricultural activities.

Figure 6 – Lao PDR Fertilizer Use (= Imports), 1990-2002



Source: FAOSTAT

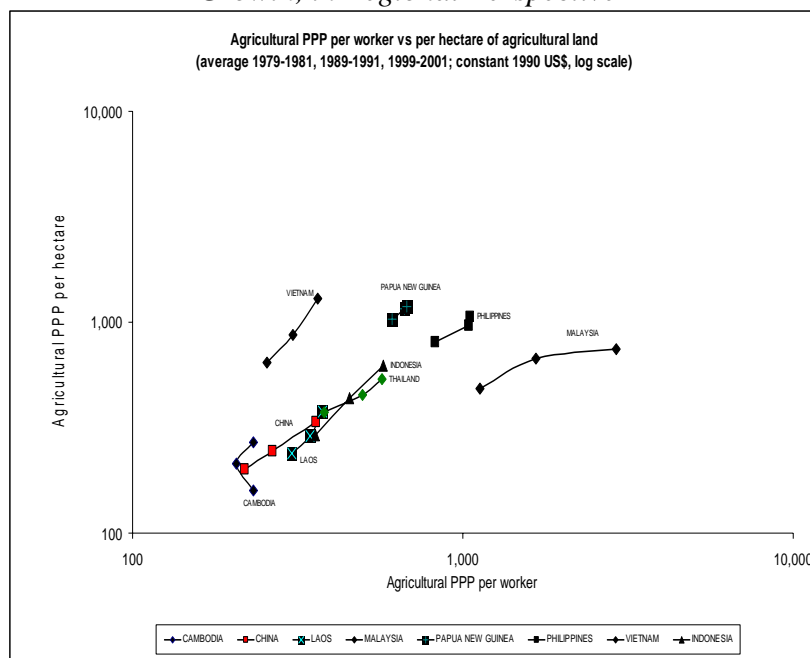
72. **Agricultural labor continues to grow.** The agricultural sector continues to absorb a significant proportion of the growing Lao labor force. The total economically active agricultural population has grown by almost a quarter over the past decade, adding about 420 thousand additional agricultural laborers (see Figure 5). Women comprise 54 percent of the agricultural labor force, and with migration trends, women's share in agricultural labor may even grow. Agriculture and

73. **Fertilizer and other purchased input use is increasing.** Overall fertilizer consumption is on an upward trend, quadrupling over the 1990s, but from very low base levels. On an arable hectare basis, use has still barely reached 10kg/ha since 2000 (see Figure 6). In comparison, fertilizer use in Indonesia and Vietnam is 121 kg/ha and 364 kg/ha, respectively.

74. But only one third of rural households apply chemical fertilizer to their fields. For a rural economy that is primarily based on farming, this proportion is very low and indicates that there is a great potential to intensify farming and improve harvest outputs, particularly in irrigated lowlands. Across agro-ecological zones, fertilizer use is highest in the Vientiane Plain and the Mekong Corridor, both representing the centers of agricultural production, particularly rice production. In the

Southern Highlands, fertilizer use is low with only 13 percent of the households being able to apply fertilizer, despite a relative high level of irrigated land, which normally reduces the risks of

Figure 7 – Lao Agricultural Land and Labor Productivity Growth, in Regional Perspective



Source: World Bank

Table 8 - Use of Irrigation and Production Inputs (% of Rural Households), by Household Consumption Quintile

	Irrigation Share	Use of mineral fertilizer	Use of insecticides
Quintile I	15.0	16.5	8.4
Quintile II	38.6	24.8	13.8
Quintile III	39.5	28.0	13.7
Quintile IV	37.1	35.2	19.0
Quintile V	46.1	39.5	24.8

Source: LECS III

making cash outlays for fertilizer purchase. Fertilizer application rates are even lower in the Northern Highlands (6 percent), and Northern Lowlands (11 percent).

75. Measures of productivity are improving.

Labor productivity in Laos improved by about a third over the 1990s, measured as agricultural sector value added per economically active worker in agriculture. This rate of growth compares favorably within the East Asia region (Figures 5 and 7), although in terms of absolute level of productivity, Lao agricultural workers are in the middle of the pack, and mostly surpass workers in countries which face

important land constraints and in which rural households get a significant portion of their income from non-agricultural sources. The growth in Lao agricultural worker productivity is likely also a result of economic reforms which have improved market incentives, as well as increased access to physical inputs of production.

Sub-Sector Performance and Prospects are Varied

76. Rice. The total area of rice harvested fluctuates quite markedly between years, mainly as a result of climatic conditions, but between 1986 and 2001

(based on five-year averages centered on those years) the total area harvested grew from 619,000 ha to 736,000 ha, an increase of 19 percent. However, within this total a significant structural shift occurred; the lowland (rain-fed) rice area expanded by 40 percent, the dry-season irrigated area increased by almost 800 percent and the upland rain-fed area declined by 43 percent (Table 9).

Table 9 – Structural Shift in Rice Harvested Area

	Harvested area (ha) 1984-1988 average	Harvested area (ha) 1999-2003 average	Change (ha)
Lowland rain-fed rice	361,762	504,777	+ 143,015
Dry-season irrigated rice	9,958	89,248	+ 79,290
Upland rain-fed rice	246,819	141,622	- 105,197
Total	618,539	735,647	+ 117,108

Source: MAF Department of Planning, Statistics Division

77. These changes were the result of a complex inter-play of factors. The lowland rain-fed area has expanded with the incorporation of newly cleared and settled land, and the expansion of the dry-season irrigated area is the result of the large public investments made in the second half of the 1990s.

Two-thirds of the increase in

dry season irrigated area over 1996-2001 was due to the public distribution of more than 8000 irrigation pumps along the Mekong River and its tributaries in the 3 main plains of Vientiane, Savannakhet and Khammouane provinces. Since 2001 dry-season irrigated rice area has declined by 25-30 percent from its peak in 2001, largely due to technical and economic problems with these pump-irrigated, dry-season areas...farmers are reluctant to grow rice in cases, associated with lack of proper management, poor performance, decreasing share of water fee collection increasing energy costs, weak water user groups, and in some cases poor irrigation distribution civil works. The longer-term trend of reduction in the upland rice area, where yields are low (40 percent of that of irrigated rice and 50 percent of lowland rain-fed rice) has been attributed to the declining profitability of rice but is hard to reconcile with most upland rice being produced for subsistence consumption and there are significant rice deficits reported still in these areas. The government's land allocation and resettlement policies and its antipathy towards swidden cropping systems are major factors in the decline in area, particularly in the Northern region, where three-quarters of the upland rice area is located. External market prices have also impacted the more market-connected portions of the rice sector, as world prices declined significantly from the mid-1990s to about 2002, although they have subsequently increased by nearly 60 percent back to earlier levels.

78. Livestock. The livestock sector shows significant growth potential and plays a very important role in the household economy of the rural poor. Over 95 percent of all livestock is produced by smallholders, and livestock sales account for more than 50 percent of cash income for many households in upland locations. There is little difference in ownership of large ruminants (cattle and buffalos) across agro-ecological zones, while ownership of small ruminants (mainly goats) and pigs is generally greater in highland areas. Management of smaller livestock – pigs, poultry and goats – is usually women's domain. Investment in livestock is an important stepping stone in household income growth. The Participatory Poverty Assessment (ADB, 2001) reveals that poor farmers, in particular, see livestock as an important means of poverty reduction.

79. Although the demand for livestock products both within Laos and in the neighboring countries is strong and considerable opportunities exist for expanding cattle and buffalo production in the sloping land zones, expansion of livestock activity is constrained by lack of credit, diseases and general weaknesses in animal health management, and availability of quality feed particularly for swine and poultry raising. Although vaccination programs which require use of cold-chain dependent vaccines are unlikely to be a viable option in many upland areas, a number of simple interventions in animal health as well as feed, management and breeding strategies can improve animal production and drastically reduce mortality rates. Disease monitoring capacity and quick outbreak intervention will also be important for the poultry sub-sector to handle avian influenza risks. Such interventions need to be complemented by the development of marketing, transport and storage infrastructure and contract arrangements with

livestock traders and meat processors/exporters. Policy needs to be accommodating by loosening formal restrictions on livestock trade to neighboring countries, imposed initially with the intent to keep prices low in domestic urban markets.

80. Fisheries. Fish catch from the Mekong River and its tributaries is decreasing and under continued demographic pressure. Aquaculture provides an alternative source of supply and livelihoods, but is to date underdeveloped compared with potential. Fish are an important source of both protein and income for rural populations, accounting for around 40 percent of total protein intake. The Government has set a target to increase the annual supply of fisheries products per capita to 20-23 kg by 2020 from about 10kg at present. However, with capture fisheries already hitting sustainability constraints, development of aquaculture is the only way to achieve the goal.

81. Government has attempted to support the growth of fish farming through the operation of fish stations with hatcheries, but results have proven mixed both at the hatcheries productivity level and with improving the technical capacity within MAF to establish fish culture promotion programs. Starting from a small base of small-scale farmers producing for own-consumption and with low productivity, growth of aquaculture is likely to be slow. Pond culture tends to be small, seasonal, and not much beyond the scale of household subsistence needs. Cage culture on the Mekong, its principle tributaries and in several reservoirs is more dynamic and market oriented.

82. Constraints for aquaculture growth include: 1) insufficient fingerling supply, 2) inadequate extension activities, 3) high seasonality of water supply, and 4) competition for available feed inputs. Government is addressing these through several partnerships. A cooperation program with Vietnam will also help Laos map out an overall aquaculture development plan for 2003-2010, upgrade the Luang Prabang fish-breeding facility, and develop models for raising fish in rice fields and in small ponds. Cage culture is being promoted in seven provinces by the Living Aquatic Resource Center with support from the Network of Aquaculture Centers in Asia-Pacific. A JBIC-supported project is supporting aquaculture.

83. Perennials. Perennial crops are considered to have an important potential role in diversified farming systems aimed at stabilizing cultivation in upland areas currently exploited using swidden systems. *Coffee* is the most important perennial cash crop. Yields and quality are very low because of very limited use of inputs such as fertilizer and use of poor planting materials the application of simple technology and practices can easily raise both by substantial amounts. Coffee covers 38 thousand hectares, almost entirely in the southern region, and concentrated in Champasack where the agronomic conditions for its cultivation are very good. While coffee is by far the largest agricultural export in value, further growth would need to focus on efficiency and quality gains, since plantings already occupies most of the agronomically appropriate area. Robusta varieties are 80 percent of production, Arabica another 15 percent, with the remainder Catimor variety.

84. Production costs were well above those in Indonesia in 1997, and with its lower cost of production, Vietnam has come on strongly. New plantings, encouraged in part by Government incentives, have helped improve yields and lower production costs, but this was slowed by the serious decline in world prices in the early 2000s. Production is overwhelmingly by smallholders. There is only one large scale plantation and one cooperative currently operating. Integrated value chain analysis suggests that Lao smallholders growing Robusta fare worse on profitability than growers of Arabica and Catimor varieties, and that further gains in on-farm and post-harvest handling techniques offer good potential for further income gains for coffee farmers. Therefore, a transition towards these more profitable varieties would be appropriate.

85. Other challenges faced by the sector are related to the limited institutional support structure. This includes the absence of extension services, marketing infrastructure, the lack of product/country brand, and the still-nascent capacities of the Lao Coffee Growers' Association. Further, the lack of quality standards and grading systems offers little incentive to farmers to produce better quality coffee.

86. The cultivation of *rubber* was long considered to be impractical because it was outside the safe latitude range. However, over the past 25 years rubber has been successfully cultivated in Yunnan province in southern China and north-east Thailand. There are many ecologically suitable zones in Laos for the production of rubber which lends itself ideally to small-holder production which does not require costly processing facilities and, once processed, is non-perishable. There is also considerable potential for the production and export of *cardamom*, mainly for medicinal purposes (it is used extensively in Chinese traditional medicine). Improved varieties with a higher essential oil content than the wild plants can be integrated into secondary forest to take advantage of the humid and shady environment.

87. Forestry. Forests figure in the Lao rural economy in four key respects: the forests are the fundamental source of land for any expansion of cultivated area; they are a source of non-timber products that are critical livelihood resources especially in periods of bad weather; and they are economic resources in their own right, generating employment, local and national budget revenues, export earnings and inputs to domestic processing and manufacturing. The government controls virtually all forest land, plays a lead role in forest production decisions and takes a major role in driving processing and trade results. GOL policy toward forestry is evolving and incorporating a more market-oriented and pro-poor approach. The Government's Forestry Strategy (2004) envisions a large number of priority programs and actions, and the next step planned (with SIDA and JICA support for the process confirmed) is to translate this into a better develop-defined implementation master plan that articulates inter-sector and intra-government roles, responsibilities and coordination.

Table 10 – Forest Cover and Change

Country/area	Land area	Total forest 2000			Total forest 1990	Forest cover change 1990–2000	
		Area	Land area	Area per caput		Annual change	Annual change rate
	000 ha	000 ha	%		000 ha	000 ha	%
Cambodia	17,652	9,335	52.9	0.9	9,896	-56	-0.6
Lao PDR	23,080	12,561	54.4	2.4	13,088	-53	-0.4
Myanmar	65,755	34,419	52.3	0.8	39,588	-517	-1.4
Thailand	51,089	14,762	28.9	0.2	15,886	-112	-0.7
Viet Nam	32,550	9,819	30.2	0.1	9,303	52	0.5

Source: FAO Forest Resource Assessment

88. As shown in Table 10, Lao PDR, in percentage terms, remains the most heavily forested country in the sub-Region.⁸ On a per capita basis, Lao is also the most well-endowed with around

⁸ These data are based on the FAO definition of forest, which defines forests on the basis of 10% canopy cover. Official Lao PDR estimates are based on a 20% canopy density criteria and lead to an official estimate of 41.5 % forest cover. For comparative purposes, the FAO data set is adequate and representative.

2.4 hectares of forest per person. With the exception of Vietnam, where an aggressive plantation establishment program has been in place for a number of years, deforestation is proceeding more slowly than in other countries in the sub-region.

89. There are three main constraints to growth in the forestry sector. One is underdevelopment of the forest allocation, classification and management systems. Since the 1990s, approximately 3.2 million hectares of mostly forest land has been designated as National Conservation Areas, covering 20 different sites. Management planning for these areas has advanced slowly, few are managed under long term, approved plans with adequate resources, leaving them vulnerable to illegal logging, hunting, agricultural conversion and other threats. Government has responded (2002) with legal provisions for the establishment of a system of National Production Forest Area (PFA), identifying eight sites (totaling around 650,000 hectares) for designation as PFA (and another 38 designated as PFA, for mapping and assessment) and management planning has begun.⁹ But none has completed the required procedures to be formally established. Application of the existing legal framework to formalize forest land allocations is a logical next step in bring areas under effective management, followed by programs of inventory, planning and consultation following successful management systems tested in completed pilot projects.

90. Second, reforms of timber sales, revenue and marketing policies and practices are needed. Despite some reforms, timber sales systems remain highly controlled and ineffective. An annual national log production quota system remains in place, administered by the Prime Minister's Office that allocates harvests to provinces. Currently, the national quota is dominated by salvage logging from the Nam Theun 2 project site, with some production from other sites. The quota system is not yet transparent, does not build from forest-specific management plans based on appropriate surveys, inventory and harvest prescriptions, and does not provide incentives for preparation and implementation of sustainable management programs. Timber produced under the quota must be processed domestically (with some exceptions). This artificially protects inefficient domestic mills and eliminates the potential access to higher value markets for round log exports to neighboring countries. Employment in wood industry (including furniture) is comparatively limited, around 24,000, and the incremental jobs created by the high protection may not compensate for lost revenues.¹⁰ The domestic price depression of this market protection will also negatively affect incentives to participate in the intended expansion of revenue sharing arrangements with local communities, usually poorer, involved in participatory sustainable forest management programs. Finally, timber sales auctions, sales contracts and payment procedures need to be upgraded to commercial practices in other sectors as a means to reduce collusion and corruption that can further reduce returns to resource management. Inter-agency consultation and cooperation involving the Ministries of Agriculture and Forestry, Commerce and Finance will be needed for successful implementation of reforms in these areas.

91. Third, wider community involvement is needed to reap its potential for improved forest management. The established public ownership of forests in Lao PDR need not change. But the Government apparatus for forest management (Department of Forestry, provincial and District Agriculture and Forestry Offices and Agriculture and Forestry Extension Services and the attached forestry units) does not have and is unlikely to soon acquire the means to conduct quality resource management programs. Moreover, the diverse interests of officials, local communities and timber

⁹ With World Bank and Government of Finland assistance through the Sustainable Forestry for Rural Development (SUFORD) Project.

¹⁰ Value chain analysis of the furniture segment suggest a great many other options for increasing the competitiveness of Lao wood processing, including reducing transactions cost for export of finished products, improving the reliability of raw material supplies, reducing overheads and others.

buyers are difficult to reconcile under any system which does not give very high priority and control over decisions to local people, for both production and conservation areas, and on choices between timber and non-timber products and services that forests provide. The legislative basis for community involvement in forestry is already in place and pilot projects have demonstrated viable practical approaches. Scaling up these pilot approaches should be considered, along with strengthening communities' incentives through revenue sharing arrangements, as well as supporting public project managers in developing innovative operational partnerships at the working level.

IV. Agricultural Development – Constraints and Potentials

Can Past High Agriculture Growth Rates be Sustained?

92. Laos has the potential for continued high rates of agricultural growth, though this will best be achieved if the transition continues from extensive to intensive sources of growth. Extensive growth, through the expansion of area and absorption of additional agricultural workers, is likely to continue, albeit at a slower pace. However, this alone is not desirable: it does not achieve the productivity gains upon which improvements in household welfare will be realized, and it will face gradually tightening environmental management constraints as agriculture creeps into the forest domain.

93. Expansion of agriculture. Existing data in Lao PDR shows that availability of land for further expansion of crop production and livestock development is not yet a constraint. The “*Master Plan Study on Integrated Agricultural Development in Lao PDR*”, carried out by the Ministry of Agriculture and Forestry and the Japan International Cooperation Agency in 2001 shows that the total potential area for annual and perennial crops is about 3.1 million hectares. Compared with the actual area currently under agricultural production, which is less than 1.0 million hectares when the effect of double cropping is allowed for, a significant potential exists for expanding the land area for productive agriculture.¹¹

94. Separate estimates of the potential area suitable for agricultural development, excluding tree crops, is 2.2 million hectares of which only about one-third was in production, on average, between 1996 and 2000. The lowland areas of the Mekong corridor are already quite intensively developed, but in other areas there is good scope for continued expansion. The areas with the most potential for crop development remain lowland soils suitable for rice and annual crops (1.94 million hectares), heavy clay soils suitable for lowland irrigated rice (92,000 hectares), and upland soils suitable for vegetable production, maize and other crops (195,000 hectares). A further 2.0 million hectares are estimated to be suitable for livestock.

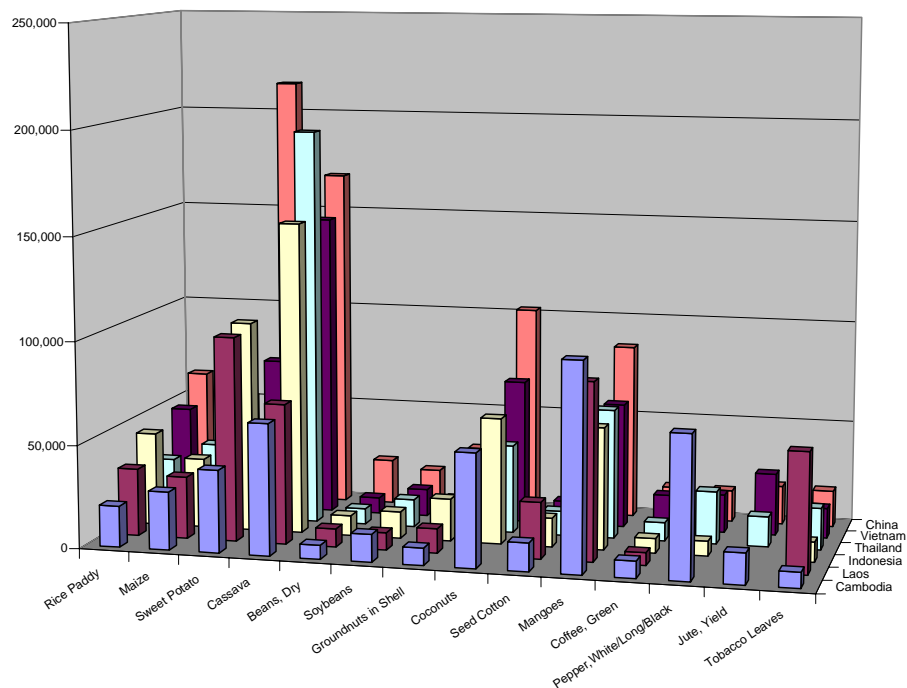
95. The expansion is theoretically possible by bringing currently under-utilized and poorly or only temporarily managed land under cultivation. Care needs to be taken that this does not infringe on existing communities' traditional access to land, and that it does not convert natural forests nor encroaches on biodiversity conservation areas. These aspects need to be integrated well with Government's increasing allocation in recent years of land blocks to commercial investors in agricultural ventures such as for rubber and sugar cane. The success of further area

¹¹ Allowance must be made for the area of Lao territory considered to be at high (2.7%) or intermediate (13.8%) risk from unexploded ordinance.

expansion will depend on how well the land allocation policy¹² is implemented particularly in the upland areas, and the careful consideration of local socio-economic circumstances, to avoid the sorts of conflicts with local communities that have derailed land allocation policies in other countries. In addition, another major impediment to quick expansion of agricultural land is posed by remaining unexploded ordinance, which is affecting about one-sixth of the total area of the country, particularly along the border with Vietnam.

96. With regards to labor, the rate of population growth is slowing, and as other sectors of the economy expand and absorb labor, the growth of the remaining agricultural labor force in the rural economy will slow.

Figure 8 – Sizeable Physical Productivity Improvement Potential



Source: FAOSTAT

97. Intensification of agriculture. Agriculture in Lao is characterized by generally low productivity, both for rice as well as cash crop production (see Figure 8). There is considerable potential for improving productivity and incomes through intensification. Intensification can be achieved along several dimensions, each of which offers potential for Laos. One dimension is at the specific farm level, and entails improving higher physical yields, through the application of greater quantities of inputs, such as quality seeds and fertilizers.¹³ Another dimension of intensification involves making better economic use of inputs through diversification into higher valued products (see next section). This is also essentially a farmer decision, but becomes more

¹² The aim of the land allocation policy is to increase land tenure security to enable farmers to invest in their land; and to encourage village communities to protect the forest environment by managing the area in a sustainable manner and by removing large portions of village's land from swidden practices. To encourage farmers to move away from swidden cultivation, tenure security on those plots is limited.

¹³ Improved rice production technology, developed in the National Rice Research Program for the lowland rain-fed environment and consisting of improved varieties, appropriate levels of fertilizer and changes in agronomic practices, increases net returns by 100 percent compared to traditional practices under farm production conditions (tested in two provinces) (NAFRI, 2000).

practical when markets for such products open up and risks are manageable. The third dimension of intensification is that of regional specialization, involving agricultural activity in different regions of a country concentrating on activities for which the natural resource endowments and market conditions give particular competitive advantages. This dimension usually requires more strategic collaboration between farmers, their associations, other participants in product value chains, as well as government services.

98. The scope for, and nature of, intensification along these dimensions differs spatially, particularly between the lowlands and highlands, and this presents a new array of issues for sector management as intensification proceeds. In particular, intensification is likely to proceed more rapidly in the lowland areas, where potential for irrigation is higher and access to markets is better. Managing and moderating these disparities will be a particular challenge.

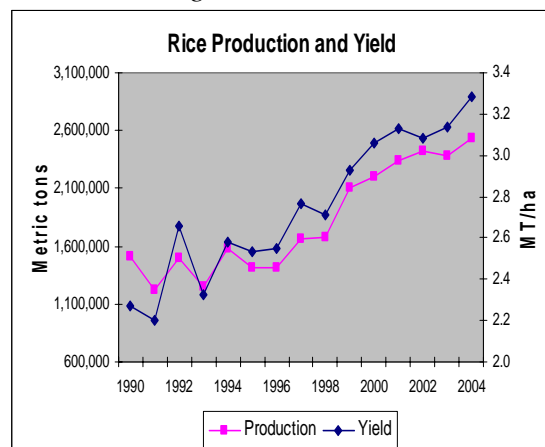
Table 11- Crop Cultivation by Land Coverage Across Agro-ecological Zones (% from Arable Land)

	Cereal	Vegetables/ Fruit	Cash crops	Glutinous Rice	Ordinary Rice
Lao PDR	4.1	2.8	6.0	74.0	8.8
Agro-ecological zones					
Mekong Corridor	1.4	1.5	0.1	89.8	4.7
Central/Southern Highlands	0.9	2.0	1.0	88.2	2.3
Vientiane Plain	2.3	7.4	26.7	61.5	7.2
Northern Highlands	10.8	2.5	2.9	64.2	11.0
Northern Lowlands	8.2	2.6	1.7	65.7	20.5

Source: LECS III

99. Rice production systems will be at the core of this intensification, initially because of their dominance of crop systems and cropped area (80 percent of the total). Rice production systems need to be distinguished among the three main systems: lowland rainfed, lowland irrigated and upland. Rainfed lowland rice accounts for over 70 percent of total production, upland rice for 18 percent but declining, and irrigated lowland for the remainder. Yields are highest in the irrigated

Figure 9 – Rice Yield Improvements are Driving Production Growth



Source: FAOSTAT

systems, and the yield gap of this system with rainfed areas is growing. Better water management techniques and improved water supply result in higher crop yields. Rice production and yields have grown quite strongly over the past decade (Figure 9), though diverging over the three main production systems, growing fastest and being the highest in the irrigated areas and now surpassing 4 mt/ha, while upland system yields have stagnated below 1.5 mt/ha.

world markets are predominantly for ordinary rice. Farmers participating in the intensification of production will need to make choices of whether and how to produce ordinary rice for external trade, while household consumption preferences remain for glutinous rice. The second challenge

is primarily in the upland rainfed systems. Rice productivity in these systems is low. As road infrastructure continues to improve, and domestic market integration increases, upland rice producers will face increasing competition from rice brought in from the more dynamic lowland systems. Upland households may continue to grow rice, but incentives will increasingly shift against rice production, with households able to rely more on local markets for reliable supply of cheap rice, enabling them to look for alternative crop production options for income generation.

101. Agricultural diversification. Agriculture needs to diversify away from pure rice production toward a mix of food and cash crops to achieve higher levels of productivity according to comparative advantage and a better market orientation of a larger share of production at the household level. As introduced in the previous section, diversification can be assessed at the farm household level, as well as at a higher level of aggregation, across farms, where farming households may specialize to take advantage of specific agronomic and economic conditions, but giving a spatial mosaic of greater diversification at the national level. Moving from near-subsistence farming to competitive inter-farm diversification will only be a gradual process with the most important issues being the need to integrate small farmers into the growing market economy and to promote private sector development in production, input supply, processing and marketing. As part of this process, it may be expected that farms in regions suitable for high-value agriculture will gradually diversify away from rice.

102. Studies carried out on the potential for commercially-oriented agriculture in Laos have indicated that those farms with irrigation for supplementary wet-season irrigation of rice and which are diversifying into dry-season cropping (e.g., of vegetables) have the greatest promise for commercial farming, particularly *in the lowland areas*.

103. In *upland areas*, the policies for a reduction in swidden agriculture that have as a major objective the restoration of forest can be accompanied by commercially-oriented production systems. Recent developments in both rubber and coffee, as well as vegetable production, agroforestry and the domestication of NTFPs, offer the potential for established, permanent agriculture and there is an important role for livestock utilizing permanently installed and improved forage crops. There is also potential for growth in response to market demand from neighbor countries for niche, natural and organic products.

104. Addressing risks and vulnerabilities of rural households needs to accompany growth. Assisting households to manage the transition towards greater commercial orientation will need to concentrate on managing risks. Perceptions of and scope for management of risks to their livelihoods by rural households will have a major bearing in choices they make, including shifts to a more market-oriented stance, in selecting their farming activities, and choosing the level of purchased inputs for intensification.

105. At present, many agricultural risks are exacerbated for rural households, particularly those more distant from the main market centers. The more remote farming areas are usually uplands, less likely to be irrigated, and therefore more susceptible to the vagaries of rainfall. More remote areas are also less integrated with markets, and as a consequence face local output price variation that appears to be higher than for rural production areas that are closer to main marketing centers, where better-developed markets do better at attenuating demand and supply variations with moderated price adjustments.

106. Rural households' perceptions of food security, in the first instance a question of availability of sufficient and affordable rice, will have a major bearing on the prospects of their

shifting away from subsistence rice production towards more remunerative crops. Farmers in areas with less profitable rice growing conditions still grow rice because of their unwillingness to rely on markets for household rice needs. Getting domestic rice markets to perform better is therefore an essential step on the path to crop diversification and regional specialization.

107. Most rural producer households in Laos do their best to manage risks with a limited toolkit of options because provision of various types of risk management options still suffers from imperfect or absent markets. The more important examples are the limited access to financial services which normally help in stabilizing consumption, the absence of functioning insurance markets for most rural households, and the poor availability of veterinary services that would limit animal disease losses. Improving these markets for risk management services should be pursued in due course, but will take time to develop and expand, and are therefore not likely to provide a panacea even within a five year horizon.

108. Lao rural households at present make use of a number of informal risk management options. Ability to resort to harvesting of common property natural resources – fishing from rivers and lakes, various wood and non-timber resources from forests – is one of the more significant safety nets that poor rural households currently have available. Gathering wild foods from forests, typically a task of women, is a standard element of most upland households food strategies. Diversification of agricultural activities is another approach to managing risks, but there are limits to the ability of poor households to do so, compared to better off households, as shown by the lesser diversification of crop activities that are conducted (Table 12). Better-off rural farming households allocate nearly seven times more land to the production of cash crops than do the poorest households.

Table 12- Crop Cultivation (% From Arable Land), by Household Consumption Level

	Vegetables/ Fruit	Cash crops	Glut. Rice	Ordinary Rice
Quintile I	2.0	2.2	74.8	11.2
Quintile II	1.9	3.3	78.6	8.2
Quintile III	2.9	4.9	75.9	8.9
Quintile IV	3.3	4.5	74.9	9.2
Quintile V	3.8	14.7	66.7	6.4

Source: LECS III

109. The implications for government attention are straightforward. First, it is clear that continued prioritization in developing the road network in rural areas is called for. Second, the current importance of the safety net provided by natural resources, and the lengthy period it will take to facilitate getting more formal risk management markets to perform better, suggests that livelihood approaches such as those being developed under Government direction for the uplands in Houaphan should be used as a model for further development. This type of approach, which emphasizes village-based land planning and begins to address land allocation issues, may also offer alternatives to the social dislocation inherent in attempts to relocate rural households to more concentrated village agglomerations nearer to road infrastructure. A robust assessment is needed to reach sound lessons learned before extrapolating it to other areas. Third, focusing on getting national rice markets to perform more efficiently, with greater integration of rural areas, will lower rural household food security risks, and allow them to consider more easily shifts from low-productivity rice production for own needs, to higher value crops with a market orientation. This should be coupled with a balancing of agricultural research and extension efforts, to give greater attention to crops relevant to upland system diversification away from rice.

Lowland and Upland Agriculture are Likely to Respond Differently

110. Lowlands. The lowland areas hold the most promise for the intensification, diversification and commercialization of agricultural production. The close proximity to markets, both internal and cross-border, provides a wide and expanding range of opportunities; with abundant land resources and low population density, the lowlands are at the center of the Greater Mekong Sub-Region, with a market of more than 200 million people, which is increasingly exerting a demand-pull on lowland agriculture. This will increase for both commodity-type products and for those where quality and freshness are at a premium. The response has been an increase in trade but mainly in unrecorded and clandestine exports to Thailand and Vietnam. Market demand is driving an increase in maize and soybean production for balanced animal feedstuff production, and there is an expansion in irrigated vegetable production. The emerging commercial production of poultry linked to Thai producers and processors has been dealt a serious blow by the emergence of avian influenza.

111. The traditional lowland farming system is predominantly one of rain-fed rice with the land left fallow, and stubble grazed, during the dry season. The typical mosaic of small fields leveled for water control requires animal traction for cultivation which is steadily being superseded by imported two-wheeled tractors. This modest on-farm investment is expected to expand, and the population of water buffalo used for land preparation will probably decline. The population of cattle can be expected to expand, for both dairy and beef purposes. There is scope for large increases in the yields of rain-fed rice production (most of which is of glutinous varieties) but there are also significant constraints, including poor seed quality and low usage of improved varieties, low soil fertility and minimal fertilizer use (especially when compared with Thailand and Vietnam), and a high incidence of insect pests with low levels of pesticide use.

112. The more advanced farming systems are based on irrigation, where small- and medium-sized schemes utilizing pump-lift from rivers predominate. These suffer from poor pump maintenance, high fuel costs (where electrical energy is not available), and lack of maintenance of the distribution systems. Many of these schemes are the result of the large public investment programs of the late 1990s promoted by the central government and aimed at increasing rice production and achieving national self-sufficiency. Many of the schemes are reported to be poorly designed and/or poorly constructed, and this is exacerbated by inadequate maintenance.

113. Irrigated production systems are based on the supplementary irrigation of wet-season rice and fully irrigated dry-season rice which has significantly higher yields as a result of the full moisture control and a more intensive use of inputs, particularly fertilizer. Although much of rice production is still based on subsistence farming, production of other crops for the market is expanding. On an increasingly larger area, dry-season rice is being replaced by higher-value vegetable, oilseed and grain crops especially in the market proximity of the main population centers. Irrigation is the key to the development of the lowlands, but much can also be done to improve rain-fed agriculture and its associated livestock production. Development of irrigation must move away from a reliance on schemes built and maintained by the public sector and begin to rely more on community participation and the private sector.

114. Agricultural development in the lowlands, which must encompass both an improvement in rice production and a diversification into other crops, faces a set of constraints; not all of these can be lifted through government policy or investment initiatives. The structural shift towards market-oriented production and a leading role for the private sector must be embraced in its totality, and the reform agenda must allow the private sector to prosper. The seven key initiatives for lowland

agricultural development outlined in the NGPES all explicitly refer to the role of the market and the private sector:

- improve and diversify farming systems with increased and intensified cash crops, livestock and fisheries production
- expand and intensify value-added processing enterprises, promoting local and direct foreign investment in agro-business
- develop government and private sector sponsored market research, market information systems and regional marketing links between producers and wholesale and retail buyers throughout the region
- develop internationally acceptable product grades and standards
- strengthen rural credit facilities through free competition and market-determined interest rates
- strengthen rural and agri-business lending by state-owned commercial banks and private commercial banks
- rehabilitate, expand and intensify dry-season irrigation schemes with participatory community-based management

115. Most of the inputs and technologies needed are already in use in Thailand (and in China and Vietnam), which minimizes the role of research but places emphasis on adaptation and extension. There is, however, a need for a wide range of other public goods, including improved roads and communications, sanitary and phyto-sanitary controls and standards, and land titling/registration and land market development.

116. Contract farming is likely to expand, at first in response to initiatives from Thai entrepreneurs but increasingly through a growing private sector of Lao, Chinese and Vietnamese investors in agri-business processing and exporting. The use of purchased inputs (of fertilizers and agro-chemicals) is likely to increase. There will be a steady increase in on-farm investment in two-wheeled tractors, threshing and winnowing machinery and low-lift irrigation pumps. However, progress is slowed by: (a) non-sustainable irrigation development due to poor quality of design and construction; (b) the reluctance of risk-averse subsistence farmers to diversify away from rice; (c) the absence of a functioning banking system to support rural finance; and (d) major administrative impediments for private sector engagement.

117. The availability of credit to support production and investment is a particularly serious constraint to innovation and diversification. The state-owned banking sector (mainly the Agricultural Promotion Bank) has limited resources and most lending is short term (one year or less) although rolling over of production credit is common. The major part of lending is in the informal sector, with usurious interest rates, and much borrowing is done on a “last resort” basis. Much needs to be done to modernize the financial sector in general and the provision of rural financial services in particular in Laos. The poor “credit culture” that has grown in response to state-owned banking and politically-directed credit will take some time to change.

118. Uplands. While uplands areas are not yet as important as lowland areas for delivering significant gains in agricultural growth, these areas are nevertheless important in the long term as suitable land becomes scarcer and productivity gains become more constrained. Therefore, it would be beneficial for the government to invest more resources to further develop the adaptive research and appropriate extension system in support of upland agriculture development. This is particularly important and challenging given the biophysical and socio-cultural diversity of upland areas in Laos.

Box 2: Land Tenure, Agricultural Development and Land Administration

Substantial changes in land policy and administration have taken place over the past decades. A land titling system (at least in urban areas) operated in Laos under the French administration from 1912 and under the Kingdom after 1954, and in effect this continued until the Pathet Lao came to power in 1975. In the period since, all land was nationalized, and land tenure was communalized and vested in the State. Many property owners became refugees and their assets were nationalized. Subsequent land legislation has evolved and recognized land use rights for individuals and organizations and a variety of State land categories, while land ownership remains with the State (1997 Land Law, amended in 2003).

Land administration and management have followed different paths in urban and rural areas. In urban areas (only one percent of total land), the Government has initiated in the mid-nineties a land titling program, which is implemented by the Department of Lands of the Ministry of Finance, and is gradually expanding in peri-urban, lowland rural areas. Households receive permanent and transferable land titles. The objectives of the program are to improve land tenure security in areas undergoing rapid land development, to encourage the development of efficient land markets and to increase Government revenues from land-related taxes and fees. In rural areas, the Ministry of Agriculture and Forestry has implemented since the mid-1990s a land allocation program through which households receive temporary land use certificates (TLUCs), valid for three years and non transferable. The main objectives of the program are the conservation of forest resources and the eradication of swidden agriculture through permanent settling and re-settling of upland villages. Although land titling and land allocation are meant to be complementary, a number of policy and process issues remain to be addressed (see below). The land allocation program has also resulted in a number of specific issues in upland areas (see Box 4).

Where pressure on land is increasing, there is a demand for formal land titling and registration. Initial assessments¹⁴ of the impact of the land titling program indicate that it has contributed to reducing land disputes, although new types of disputes have emerged (e.g. inheritance-related). There is a demand for land titles in villages around areas already covered by the program, and in areas where land development is taking place and where land prices and pressure on land are increasing (along roads and in some border areas; where major infrastructure programs are planned – e.g. roads, irrigation schemes; in areas of important in-migration). Surveys indicate that household demand for titles is based on the security conferred by land titles, including reduction in land disputes, as well as more secure land transactions. With no or little access to finance services in most peri-urban and rural areas, the use of land as collateral for access to credit remains limited. Initial reviews of the land titling program concluded that it should in the medium-term focus on those areas where demand for titles is high (high population density, land development, urban/peri-urban areas) and where the economic returns of the public investment in land titling and registration are higher.

Further expansion of the land titling program in rural areas will meet increasingly complex policy and technical issues, which need to be addressed rapidly. Studies conducted under the Second Land Titling Project, implemented by Government with support from AusAID, GTZ and the World Bank indicate that, before further expansion of the land titling program in rural areas is considered, the following issues would need to be addressed:

- Customary land tenure systems in rural areas vary substantially among ethnic groups. A thorough review of those systems and an assessment of the potential impact of formalizing and registering land tenure are needed. In remote rural areas, initial surveys indicate that there is no demand for formal land tenure registration, as villagers consider that customary land tenure arrangements provide sufficient tenure security and flexible land management mechanisms;
- While communal land tenure systems are common in rural villages, there are no legal provisions for their registration (over than as State land). In areas where demand for land and pressure on land is high, there is a risk that this could result in opportunities for land grabbing.
- There is currently no clear mechanism for the conversion of TLUCs into permanent land titles. In addition, many TLUCs have already passed their three-year validity, or have been informally exchanged or transferred, which will increase the complexity of a possible conversion into permanent titles (as was originally envisaged).
- More rapid development of the land policy framework is needed through a transparent and efficient land policy dialogue.
- Strengthening and simplification of the currently complex institutional arrangements for land administration and management are needed. The amended 2003 Land Law includes provisions for the creation of a single National Land Management Agency, which would address current concerns about lack of coordination between the various agencies involved in land administration and management (DOL/MOF, MAF, but also the Department of National Land Use Planning and Development, the Department of State Assets, and the National Geographic Department). However, progress with the establishment of the agency has been slow and the key policy and technical issues identified above remain to be addressed.

¹⁴ Socio-economic Baseline Study, Ministry of Finance, Lao PDR Land Titling Project, July 2003

119. Upland areas pose a special challenge to agriculture growth. Most upland agriculture is at the subsistence level, and permanent food security is elusive because of its remoteness to markets, limited access for government support service, low levels of inputs, and reliance on collecting wild foods from forests. Moreover, market links to rice surplus areas are not likely to be fully developed due to physical isolation and difficult terrain. Therefore, achievement of food security at the household level will remain a pre-requisite to the development of other income sources.

120. Currently, upland agriculture in Lao PDR consists mainly of shifting cultivation (swidden) agricultural system, usually on hilly or mountainous terrain (20-75 percent slope) which is dominantly based on upland rice production. The swidden systems differ by region, topographical location, and ethnicity. These production systems range from extensive forest-fallow system, typically with cultivation of one or two crops followed by long fallow period, to intensive multiple cropping system with two or more successive crops grown each year. One thing that they have in common is shortening of the fallow period over the past 50 years from 38 years in 1950s to 20 years in 1970s to as little as three to five years in the 1990s leading to declines in productivity. The causes of the shortened fallow periods include population pressures, the government's land allocation program which aims to stabilize shifting cultivation, and contradictory government policies. For instance, fallows of more than three years can be considered as degraded forest and then can be reclassified as regeneration forest. This exerts pressure on farmers to not let their land rest for more than three years. Market signals are also changing current upland agricultural practices. Inevitably, these internal and external factors are putting stresses on the traditional systems leading to their transformation (see Box 3).

Box 3: Uplands Agriculture– in a State of Transition

Swidden cultivation is the dominant land use system of upland Lao PDR, and often provides the basis for organization of society, governance, and coherence in upland communities. The swidden systems are diverse, adapting to different agro-ecological conditions. But most of them reflect a traditional, community-wide, largely self-contained and ritually sanctioned way of live. However, the swidden systems are not static and are constantly evolving to adapt to changing social and economic factors. As a result, the diversity of agriculture-based upland livelihood systems is growing.

For instance, in Huaphan Province, a study has shown that, as a reaction to increasing pressure on land, Pieng Kai, Keo Xik and Khang Khao villages have diversified their activities. They shifted to wet rice cultivation where possible, established home gardens, fruit orchards and fish ponds; and sought income from off-farm work. Provinces close to the Chinese and Thai borders are being influenced by external markets. In border provinces of Oudomxay and Luang Namtha, contract farming to grow sugar cane and rubber for the Chinese market is being practiced. Here, the private sector is providing the extension packages needed by farmers to enable them to rapidly transform their traditional practices into sugar cane and rubber plantations. Other examples include Chinese traders financing tea production in Phong Saly province or sugar cane, cardamom, and sesame production in Mouang Na Moh, Oudomxay Province. With better road access, better-off upland farmers can purchase rice surpluses from lowland farmers and could then focus on producing cash crops.

121. Globally, shifting cultivation is a transitional stage in the process of evolution from hunting and food gathering to sedentary farming. In most parts of the world, shifting cultivation has been gradually replaced by more intensive forms of permanent agriculture. The factors leading to transformation are population density, land availability, technology, market forces and economic/political structure. The transformation of shifting cultivation globally usually involved the adoption of one or more core technologies such as rice paddies, fish ponds, home gardens, tree crop plantations, mixed farming systems with draft animals and managed feed sources, agro-pastoral systems in mountainous areas, and mulch farming systems. What these all have in common is that they are more productive than existing practices, and hence add to the current food security of households, and would provide communities with more viable options to stay-put. In

some countries such as Nepal and Malaysia, shifting cultivation has been almost entirely replaced by permanent agriculture. But in Laos it is still undergoing transformation.

122. It is important to recognize that such transformation in upland Lao is complex and will take place gradually and in many different ways. There are numerous examples of the way in which the pressure for rapid change has produced negative impact on local livelihoods both in Laos and elsewhere. The relocation program is one example whereby families that are moved are not equipped to adequately deal with the changes involved.

123. The main challenge for government is *how to support* the transformation from the current situation to a future improved livelihood scenario. It is expected that the role of government in supporting the transformation is to facilitate rather than necessarily leading the process. Experiences from peninsular Malaysia and northern Thailand indicate that facilitating the change requires creation of a conducive environment, including physical infrastructure development and the provision of a secure land tenure system and support services. In Nepal, replacement of shifting cultivation by intensive sedentary agriculture was due in part to access to new technology reinforced by the land tax and land tenure system. Farmers were granted usufruct right to the land through payment of taxes which favored adoption of permanent agriculture which had higher yields and hence more income to pay off taxes. While Lao Government has a (forest land) allocation program in place, the impacts on upland communities have been mixed (see Box 4).

124. On support services, the government is currently emphasizing the need to strengthen the existing government led agriculture extension system. However, given the diversity and complexity of upland agriculture and the limited capacity of government to reach remote upland communities, a different extension strategy is needed for the upland than the lowland areas. An important element for incorporation in such a strategy is that communities themselves should lead the search for improved livelihoods and determine how best to transform their livelihood. Facilitating formation of public-private (e.g., farmer-to-farmers, NGOs as well as private companies) partnerships to provide support to communities is also an option. Government is moving its extension approach in these directions, and intends to focus public delivery on the complex array of needs in uplands areas, while promoting as much as possible private-led provision of extension in lowland areas, particularly in the context of contract farming.

125. Any strategy to promote upland agriculture growth in Laos will need to rely on an understanding of the existing and potential patterns of transformation. The NAFRI sponsored uplands workshop in 2003 was a good starting point in this regard. It proposed a number of alternative solutions to increase productivity and proposed developing a database to keep track of existing and emerging upland solutions. Before doing that, however, there is a need to better understand the process of change (e.g., factors facilitating the change) of all forms of swidden in Laos. For instance, the transformation taking place in the border provinces is being led by external and market forces from neighboring countries such as China. Developing a detailed typology of existing upland agriculture/livelihood systems would then be a useful step to monitor the changes. There is also a need to carry out a more in-depth assessment of lessons from various government and donor-funded projects supporting development of alternative livelihoods in upland areas, particularly with regard to potential for scaling up of these small scale pilots. Once that information is available, then it would be possible to map possible options in accordance to the typology of systems. The important issue of design of "safety nets" for those vulnerable ethnic minorities and other groups which are adversely affected by changes and who experience adverse welfare shock in terms of declining food security and incomes, also warrants further study.

Box 4: Land and Agricultural Development in Upland Areas

In the late 1980s, the Ministry of Agriculture and Forestry started to pilot a land use planning and land allocation program in rural uplands which was subsequently extended nationwide in the mid-1990s. The objectives of the program are the eradication of swidden agriculture by 2010, forest conservation, and the improvement of land tenure security and of household living standards in upland rural areas. About 5,300 villages have been covered over the past decade, and over 330,000 households have been issued temporary land use certificates (TLUCs), representing 50 percent of the villages and 50 percent of households in rural areas. The program has slowed down over the past few years as it faced budget constraints.

Reviews of the land allocation program have identified several issues regarding its implementation:

- While improving living standards of rural households is a stated objective of the program, impact studies reveal that the program has either had limited impact on households living standards, or that living standards and food security have instead deteriorated as a result of the program, in particular through *more limited access* to common pool resources (forest and land) for households. In particular, the poorest households which are more dependent on those resources have been the most affected. This reduction in access to land and forest resources and the increased pressure on resources which resulted was compounded by the absence of support for the intensification of farming systems (such as extension services) or, in some places, of an favorable environment for intensification of farming practices (e.g. access to markets);
- In part due to limited capacity and resources, land allocation was implemented rapidly and through standard mechanisms, with limited consideration for customary land tenure systems and traditional land use and management mechanisms, and with limited participation by villagers. Coordination between agencies involved has also been weak, with limited coordination between land allocation by MAF and village resettling by local authorities (e.g. there are cases when resettling of a village was implemented after land allocation). In some areas, the arrival of new migrants has increased pressure on land and new land disputes have emerged;
- After the distribution of TLUCs, no follow-up was undertaken and there are currently no provisions for their conversion in permanent land titles. In addition, there is no consolidated land information system to facilitate the management of TLUCs and other forms of land ownership certification.

Under the Second Land Titling Project, implemented by Government with support from AusAID, GTZ and the World Bank, a review of the land allocation program and a discussion paper on options to address the issues identified above is planned.

Finally, in some upland areas, the diversification of farming systems is taking place through investments in perennial crops. The development of plantations in upland areas (e.g. smallholder rubber and coffee plantations) and the introduction of contract farming systems are likely to generate a demand from households for formal registration of land ownership. The capacity of the land administration and management agencies to respond to this demand will remain limited in the short- to medium-term.

Integrating Markets can Facilitate Growth and Moderate Spatial Differences

126. Marketing in the broadest sense is of key importance, and both the domestic and export markets have important roles to play. There is an undoubted synergy between an agricultural sector supply-side “push” of increased and improved production and a demand-side “pull” through trade sector improvement and reform. However, many necessary elements are either weak or missing altogether: rural finance is a big obstacle; foreign investors must work with the government in the absence of a strong entrepreneurial class, with the obvious short-comings of this approach; and many state-owned enterprises have been disbanded but with little having grown up to replace them.

127. Integrating markets will help to facilitate the diversification of production. In the uplands, the integration of production to localized food markets will permit the increased adoption of cash cropping and a reduction in the relative importance of subsistence food production. In the lowlands, increased integration to domestic urban markets and cross-border markets will provide

an impetus to the diversification already taking place, particularly on irrigated land and in mixed cropping and livestock production systems. The focus on transport infrastructure is entirely appropriate. Communications will also be important. Market integration will substantially ease the national food security issue, particularly with the existence of two large rice surplus producers on its extensive borders. There is considerable evidence that the food security issue is more related to affordability at the household level and access in remote deficit areas rather than of national availability of supply.

128. Domestic markets. A large proportion of farmers engage in subsistence farming or production systems that are still only marginally connected to markets. Accelerating the transition to producing higher valued outputs, which means a shift in emphasis away from rice, will entail a mix of public investment in better road and communication networks so as to reduce high transport costs, promotion of competition policy that encourages more participants in rice trade and transport, continued expansion (where economically merited) of dry season irrigation expansion, elimination of domestic policy (often sub-national) impediments to rice movements, suppression of informal roadside tolls, minimization of barriers to cross-border trade in rice, and improvement of access to and quality of market information available.

129. Domestic market integration has benefited from two specific areas of government focus. The first is attention to the road network. Public resources are being devoted to this area, and will need to continue. Government is strengthening its capacity to address needs in this area through development of a rural transport infrastructure policy (RTIP) under the coordination of the Ministry of Communication, Transport, Post and Construction.¹⁵ This strategy is tackling the massive task of responding to the NGPES objective of providing by 2020 all-weather road access to the over 3,500 villages that currently do not have proper road access. Elements of the draft strategy under consideration include: (i) planning on the basis of access from district centers to village cluster (*kum ban*) centers, then within the clusters, with an initial focus on the 47 poorest districts; (ii) how to structure the new (2002) Road Maintenance Fund so that it can cover the maintenance of all roads down to those reaching village cluster centers; (iii) road links *within* village clusters would be built and maintained on the basis of a strong contribution from the local community, with labor-based techniques, and with technical and financial assistance from the District authorities. Investment at all levels of the road network would need to be increased, as would, to accommodate this growing activity, increases in institutional capacity particularly at the provincial and district levels.

130. The second area is the reduction of policy interventions, often taken by provincial authorities, which can effectively block inter-provincial transport of foodstuffs because of perceived local food security risks. These have been substantially reduced with the dismantling of the marketing privileges of an array of state enterprises in the 1990s. However, the marketing monopoly of the State Food Enterprise in five provinces continues. While the uptake of opportunities and competitive behavior by the private sector can be slow following retrenchment of state involvement in domestic commodity marketing, this is the more viable long-term foundation for integrated and efficient domestic markets.

131. External markets. Three neighboring countries have maintained strong economic growth and in the vicinity of Laos the Greater Mekong Sub-Region represents a market of 200 million people with growing incomes and effective demand for agricultural products in which Laos farm producers have an actual or potential comparative advantage (e.g., temperate and off-season fruits

¹⁵ A draft final report for Government consideration was available as of March 2006.

and vegetables). The market economy is of growing importance and pressure is being placed on Laos by other ASEAN members and, to a lesser extent, by the EU. A key question is how Laos can manage this change and transition to its advantage.

132. Tariffs are already low, and further phased reductions are programmed as part of ASEAN agreements. In addition, the “Early Harvest Program” under the ASEAN-China Free Trade Agreement provides for the elimination of tariffs by January 2006 on a wide range of agricultural and livestock products.

133. Sanitary and phyto-sanitary (SPS) regulatory capacity is limited at present and lack of action on this front will slow agricultural development, particularly where the source of growth is the export market. The capacity for managing food safety, animal health and plant health in cross-border trade is weak; testing facilities and staff are limited; certificates are frequently issued without adequate surveillance, testing and inspection; and there are “governance problems” in implementing SPS-related border controls. There is widespread use of illegal agricultural chemicals in neighboring countries and a strong risk of illegal imports, as chemical input use expands in Lao production. Regulation, monitoring, promotion of good practices and enforcement of regulations are important elements of food safety and essential to avoid restrictions being placed on exports.

134. The adoption of safety standards represents a set of up-front costs of entry into export markets, and their absence is an important driver of unofficial and unrecorded trade flows with the three largest neighbors of Laos. These costs could easily cancel out the competitive advantage that might otherwise accrue from low labor costs, counter-seasonal availability of fresh produce and the potential to fill “niche” markets. The inability to meet SPS requirements restricts access to markets opened up by trade liberalization. Early assessment results indicate that the priorities for Laos in adopting SPS measures lie in the potential and emerging formal export markets for fruit and vegetables, coffee, other fresh products, and high-quality beef.

135. Laos has a strongly asymmetrical relationship with her three largest neighbors (Vietnam, China, and Thailand), but there are extensive free-entry lists of agricultural commodities specified by China and Thailand which provide a large potential “demand-pull” stimulus to diversification and increase in production. This will require a growing emphasis on, and investment in, post-harvest handling and storage, processing and packing, product quality control, and the maintenance of standards.

Deepening Agricultural Value Chains Will Expand Domestic Benefits

136. The identification of cost factors and institutional constraints in the supply chains that affect the competitiveness of traditional and innovative products must be identified and, wherever possible, remedied. Value-chain analysis was carried out for this Paper to identify the practical obstacles to trade in four products - rice, coffee, maize and livestock - which are important in domestic, and increasingly export trade. There are both product-specific and generic issues. All four products are hampered in their market-driven development by poor physical infrastructure as it affects transport access and cost, the lack of regulatory frameworks and enforcement of contracts, weak extension services and provision of technical assistance, poor access to and high cost of formal finance, poor distribution of modern purchased inputs, poor farm management, an inability to respond to and contain the risks of both flooding and droughts, and excessive government intervention in market transactions. The single most important private sector

response to these “cross-cutting” issues is a generalized under-investment in production and processing.

137. Rice is constrained by the lack of promotion, use and knowledge of non-glutinous rice varieties which are those most in demand in export markets and by inefficiencies and perverse incentives in rice milling. Coffee production and exports are hampered by the absence of a grading system, standards and certification and by poor post-harvest handling and process techniques. Maize is constrained by a lack of reliable hybrid seed varieties, high post-harvest grain losses, “pirate” purchasing in the arena of contract farming, and an apparent high propensity for maize cultivation to provoke soil erosion and degradation. Livestock production is constrained by the poor genetic base, especially in cattle, poor disease control and the absence of a domestic animal feed industry.

138. Many of these value-chain issues are difficult to ameliorate, particularly in the short to medium term, and several depend on actions that are beyond the control of the institutional structure of the agricultural sector. For example, improvements in production, investment and trade finance depend on the restructuring of the financial sector, and increased involvement by the private sector and the utilization of the full range of financial services (both saving and borrowing) by small farmers.

Box 5: Contract Farming

Lao agriculture is gaining experience with contract farming. Examples of this arrangement are growing that involve value chains serving both domestic and external markets, for maize, sugar cane and vegetables. Contract farming can provide competitive solutions in some contexts, but not all, and is not a substitute for policies that promote market development more broadly. But with selective attention and careful distinguishing of appropriate roles, Government agencies can facilitate the emergence of contract farming in partnership with farmers and commercial investors.

For much agricultural production, small family farms are the most competitive producers. However, they often have difficulty when faced by weakly organized and poorly performing input and technology information markets. Further, small family farms are often at a disadvantage on the marketing side, producing small quantities and non-specific qualities that do not match demand. Other agents in agricultural product value chains are often better placed to surmount these input and marketing constraints, creating the basis for partnering through contract farming with small farmers when these are competitive at the production level.

Government’s role can beneficially facilitate contract farming in three areas. First, small farmer organization is needed for contract farming to work, and there are costs to the strengthening of these. Government’s can bear some of these costs through programs to support capacity building and training of farmer groups. Second, contract farming needs assurance by parties involved that agreements will be delivered upon. Trust and reputation are the best guarantor of this, but governments’ need to provide transparent and balanced enforcement in the last resort, and an arms-length stance in others. Third, developing successful contract farming is a learning-by-doing process, and this learning function can be facilitated by government by supporting learning for a which bring together parties in contract farming to share and build upon their experiences.

139. Both technology and market access can be provided by investors from neighboring countries who are already active in these areas. Some companies have established supply chains to top-end markets in Europe and Japan. Absence of reliable SPS services is an impediment; government and the private sector need to develop capacity for providing “tailor-made” services for emerging new industries.

Trends and Issues in Public Expenditure Management

140. Rationale for Public Sector Involvement. The principal justification for public intervention in agriculture remains poverty reduction. With 38 percent of the rural population still living in poverty, of which a significant portion is still facing seasonal food shortages, there is a clear rationale for the government to promote household food security through support activities that aim at strengthening and diversifying the often inefficient subsistence farming systems of the poor. Closely associated with the need to strengthen subsistence farming is the need to assist farmers to adopt sustainable upland shifting cultivation practices, particularly in areas of high population pressure. In the context of food security, a key public function, however, is to move gradually toward a food security policy that relies on sufficient and stable rural incomes as well as integrated and functioning rice markets rather than household-level rice production only.

141. An additional challenge for the government is to provide adequately public goods that facilitate development of markets in the medium-term. This will come through a continued focus on investments in physical and productive infrastructure, such as roads to improve links to markets for smallholders and irrigation schemes to enhance agricultural productivity; and agricultural research and extension services to strengthen private producers' technical capacities and competitiveness. While the private sector is still deepening and capacity of village-level institutions to manage infrastructure and irrigation schemes remains weak, the government will retain an important transitional role in assuring the operation and maintenance of the country's productive infrastructure.

142. An important aspect in the context of the upland and lowland development agenda is that spatial inequality is likely to increase as agriculture intensifies and market integration advances more rapidly in areas of greater advantages, i.e. the lowlands, while such transformation is likely to take much more time in the remote uplands. The government therefore also needs to maintain social cohesion through redressing such emerging spatial inequalities. Linking the upland areas to the rest of the country through better public service provision is a priority in this regard.

143. The NGPES details a number of specific sector programs that provide a clearly defined policy and development framework in which public spending in agriculture and rural development should occur. Central and sub-national budgets for capital and recurrent expenditures are to be formulated along these defined priorities. However, expenditure trends along administrative, economic, and functional dimensions repeatedly reveal major reporting inconsistencies, which are results of a number of persistent public expenditure management issues. In effect, these issues prevent the central and sub-national level authorities to increase the efficiency in the use of public resources for poverty reduction and growth.

144. Recent expenditure trends. During 2002 to 2004, the agriculture budget averaged around US\$46.5 million (Table 13). Agriculture's share of the total budget decreased slightly from 12.7 percent in 2002 to 11.2 percent in 2004. The agricultural budget also decreased as a proportion of GDP from 2.3 percent in 2002 to 2.1 percent in 2004.

Table 13 - GDP, Total Budget, and Agricultural Budget (US\$ million)

Year	GDP	Total Public Expenditure	Agriculture Expenditure	% of Total Expenditure
2002	1,668.5	302.3	38.5	12.7
2003	2,053.9	383.0	48.8	12.7
2004	2,362.5	452.2	50.8	11.2
Year	Agriculture Expenditure	Central Expenditure	Provincial Expenditure	Provincial Expenditure (%)
2002	38.5	5.6	32.9	85
2003	48.8	8.1	40.7	83
2004	50.8	9.8	41.0	80

Source: Lao PDR – Ministry of Finance

145. Issues: Central ministries need better information on what is being spent on agriculture by sub-national authorities. The majority of agriculture sector expenditure (about 80 percent) occurs at sub-national levels, that is, provinces and districts, as is appropriate for the sector and stipulated in the government's policies. However, center, provinces and districts are regularly experiencing major shortfalls in the budget allocations approved by the National Assembly and resources actually reaching the ground level are seriously constrained. With budgeted resources not materializing, provinces resort to their own revenue generation to compensate for the shortfalls. These sub-nationally generated revenues are allocated along provincial-level priorities which, by and large, are in line with the central government's priority programs. Actual expenditures, however, are only sporadically reported back to the center and hence, neither MOF nor MAF are able to monitor sector expenditure at the sub-national level.

146. Issues: Donor-funding needs to be incorporated into national budgeting and monitoring to enable integrated management. Donor-funded projects are mostly 'off-budget'. The agricultural development program is largely project-driven; and provinces and districts struggle to align national sector priorities with those of the donors. Expenditures under donor-funded projects are not incorporated in national budget reporting and management documents, particularly in cases where donor agencies and other organizations do not delegate disbursement authority for project funds to implementing authorities. Although the Ministry of Foreign Affairs (MOFA) and MAF maintain data bases on committed foreign resources, both are unable to track actual project expenditures occurring at sub-national levels. In reality, only notional figures of approved domestic counterpart resources are available at the central level.

147. Issues: Sustainability requires a better balance, between recurrent and capital spending, and investment in physical infrastructure and in supportive institutional capacity. Expenditure policies have continued to be biased toward physical investments without appropriate consideration for recurrent spending requirements. During the past three years (2001-2004), capital expenditures accounted for more than 90 percent of total sector expenditures (Table 14). As indicated above, capital expenditures reported by MOF primarily represent domestic counterpart funds allocated to donor-funded projects.

Table 14- Agricultural Budget: Capital and Recurrent Expenditures (US\$ million)

Year	Agriculture Expenditure	Capital Expenditure	Recurrent Expenditure	O&M as % of Agric. Expenditure	
			Salaries/ Wages	O&M	
2002	38.5	36.0	1.6	1.0	3.0
2003	48.8	46.2	1.7	1.0	2.0
2004	50.8	47.8	1.9	1.1	2.0

Source: Lao PDR – Ministry of Finance

148. While MAF has been trying to guide provinces and districts to shift away from investments in physical infrastructure, particularly irrigation, towards investments in human resource development, particularly for extension, and agricultural research, it is difficult to assess whether such shift in investment priorities has actually occurred.¹⁶ The main reason for this is that capital expenditures are not disaggregated along such sub-categories but reported as aggregate capital expenditures.

149. Recurrent expenditures amounted to about 7 percent of total sector expenditure, which is low by international comparison. Salaries and wages accounted for about two-thirds of recurrent spending and O&M expenditures accounted for a negligible 3 percent of total sector expenditure and have been decreasing as share of recurrent spending.

150. Given the government's continued emphasis on promoting national rice self-sufficiency, the irrigation sub-sector remains the most important recipient of public resources. The irrigation investment plan 2001-2005 indicates that spending of domestic funding occurs primarily at sub-national levels while DOI managed, on average, about one third of all foreign resources dedicated to the irrigation sub-sector (Table 15). DOI is hence the only department within MAF that controls significant foreign resources, although foreign funding available to or channeled through DOI has been decreasing in recent years. Within the irrigation sub-sector, there is a need to accelerate implementation of the stated policy of transition from predominantly physical investment towards building of "software" components that promote the commercialization of irrigation-based production systems and their linkages with markets.

Table 15 – Public Investments in Irrigation, 2001 – 2005, US\$ Millions

Year	Domestic Resources		Foreign Resources	
	Department of Irrigation	Provinces	Department of Irrigation	Provinces
2001	0.04	35.55	0.00	4.06
2002	0.04	25.44	6.87	8.96
2003	0.04	25.98	4.10	6.03
2004	0.02	33.28	3.72	9.26
2005	0.02	3.05	1.71	8.09

Source: MAF – Department of Irrigation

151. The most recent irrigation investment plan of DOI includes the rehabilitation of a total area of 25,800 hectares for wet season rice cultivation and 16,800 hectares for dry season cropping in a total of 10 provinces with a total required investment of around US\$95 million (Table 16). While the northern provinces of Oudomxay, Luang Prabang, Xayabury, Bokeo, and Xiengkhuang have received about one third of actual investment during this five year period, the majority of the rehabilitation has taken place in the provinces of the Mekong Corridor, namely Vientiane Municipality, Vientiane Province, Savannkhet, Champasack, and Saravane. There has been a clear concentration on Vientiane Municipality, which has received nearly as many funds as all of the northern provinces together. Total debt accumulated through irrigation scheme construction and rehabilitation during the period amounts to nearly US\$17 million.

¹⁶ The new MAF policy is to allocate about 40 percent of capital expenditures to Human Resources Development, Extension and Research & Development and about 60 percent to physical infrastructure construction at provincial and central levels.

Table 16 - Department of Irrigation: Irrigation Investment Plan, 2001 – 2005

	Capacity* (ha)		Total	Total	Actual	Accumulated
	Wet	Dry	Planned	realized	Payments	Debt
	Season	Season	Investment	investment		
Northern Uplands						
Oudomxay	200	150	21,144	21,144	6,159	14,984
Luangprabang	1,800	1,500	42,618	26,486	21,799	4,690
Xayaboury	1,450	950	60,543	60,121	41,437	18,684
Bokeo	550	550	3,195	3,195	1,420	1,774
Xiengkhuang	4,200	500	73,000	38,690	26,488	12,202
Mekong Corridor						
Vientiane						
Municipality	4,000	3,300	263,893	120,446	86,902	32,988
Vientiane Province	4,850	2,550	63,739	70,685	42,774	27,911
Savannakhet	4,512	4,200	287,759	74,997	52,492	22,504
Champasack	2,750	1,800	132,523	78,790	44,686	34,103
Saravane	1,500	1,300	58,496	17,775	9,604	8,170
Total (KIP):	25,812	16,800	1,006,912	512,332	333,765.35	178,014
TOTAL US\$			95.36	48.52	31.61	16.86

* It is unclear whether these only include newly constructed irrigation schemes or rehabilitation of flood damaged schemes as well.

152. Issues: Larger administrative budgets are needed at sub-national levels to permit adequate management of expanding investment responsibilities. The Provincial Agriculture and Forestry Offices (PAFOs) are confronted with insufficient administrative budgets that prevent staff from timely monitoring of project implementation on the ground. Reportedly, only about 10 percent of requested administrative budgets for PAFOs are actually made available from the center. Being unable carry out routine visits to districts, where projects are implemented, PAFOs are also unable to monitor activity implementation and disbursements of donor funds in the districts. Lack of reporting from donors to PAFOs, particularly when implementation is done through the District Agricultural and Forestry Offices (DAFOs) or own project staff, also contributes to the lack of knowledge and reliable investment statistics at the provincial level.

153. Issues: The build-up of high levels of arrears in the provinces needs to be resolved. In recent years, the provinces have built up significant arrears to private contractors. One of the reasons for the accumulation of high levels of debt has been that allocations from the center and locally generated revenues have generally not been sufficient to meet the provincial obligations. While it appears that the provincial work program in a given year is implemented on the basis of budgeted resources, shortfalls in resource allocations cause the provinces to delay payments to contractors for ongoing work. These deferred payments are then budgeted for in subsequent years but continued shortfalls do not enable the provinces to honor contractual commitments. Anecdotal evidence suggests that in some provinces private contractors are paid through allocations of logging quota or timber. In addition, MAF frequently delegates emergency activities in response to floods or droughts to the provincial line departments but without ensuring that adequate additional budgets are provided. As such emergency activities have not been approved in annual budget plans, the provincial finance sections often refuse to process payments. Provincial agricultural authorities estimate that debt levels are several times as high as annual planned budgets. More importantly, continued accumulation of debt owed to private contractors is seriously hampering the working relationship with the private sector.

154. For the next Five-Year Plan (2006-2010), MAF has formulated a medium-term expenditure plan that indicates that a total of nearly US\$120 million is needed to implement the

agricultural sector program consisting of 4 priority programs (Table 17). Spending projections are in the range of previous annual budget allocations and indicate that food security concerns and diversification in agriculture and forestry will absorb the main share of the capital budget (Programs III and IV). It is however unclear whether the planning and preparation of this medium-term expenditure plan has involved provinces and districts. At this point of time, no provincial breakdown exists for this expenditure plan.

Table 17 - Medium-term Expenditure Plan 2006-2010 (US\$)

	Natural Resources Planning for Poverty Alleviation (Program I)	Land and Forest Allocation (Program II)	District-led Projects (Program III)	Agriculture and Forestry Support Services (Program IV)	TOTAL
I. Wages, Salaries, Benefits	55,952	1,285,713	13,595,236	15,390,000	30,326,901
Central	16,785	385,714	4,078,571	4,617,000	
Local	39,166	899,999	9,516,665	10,773,000	
Foreign	44,762	1,028,571	10,876,189	12,312,000	
II. O & M	22,381	514,285	5,438,094	6,156,000	12,130,760
Central	6,714	154,285	1,631,428	1,846,800	
Local	15,666	359,999	3,806,666	4,309,200	
Foreign	17,904	411,428	4,350,475		
IV. Subsidies / Transfers	11,190	257,142	2,719,047	3,078,000	6,065,379
Central	3,357	77,142	815,714	923,400	
Local	7,833	179,999	1,903,333	2,154,600	
Foreign					
VI. Capital Expenditure	134,286	3,085,713	32,628,567	36,936,000	72,784,566
Central	40,285	925,713	9,788,570	11,080,800	
Local	94,000	2,159,999	22,839,997	25,855,200	
Foreign	26,857	617,142	6,525,713		
Total Expenditures	222,810	5,142,855	54,380,946	61,560,000	121,307,606

155. Issues: MAF's expectations of domestic resource allocations from MOF seem to be overly optimistic if the history of annual budget shortfalls is taken into account. Wages and staff subsidies will account for 30 percent of the total priority program expenditures while O&M are projected to increase to 10 percent. Capital investments will decrease to 60 percent of sector spending (as compared to currently 80 percent) of which 30 percent are expected to come from foreign sources. While this medium-term plan appears to be broadly realistic in terms of overall spending, MAF's expectations of domestic resource allocations from MOF seem to be overly optimistic if the history of annual budget shortfalls is taken into account. Of particular concern is the share of staff salaries on total spending. As salary payments take priority above all other spending, the implementation of the above mentioned agricultural priority programs could be severely hampered if the practice of under-funding approved budget plans continues and budget shortfalls can not be effectively resolved.

156. Issues: Financing plans to address MAF's NT2-related expenditures and accumulating debt as well as the mounting provincial debt need to be included into the medium-term expenditure plan. The current budget planning for the 2006-2010 period doesn't involve any provisions of how the provincial debts will be tackled. In addition, MAF has recently been tasked with the supervision and implementation of clearing the area of the NT2 reservoir and is currently accumulating debt in the course of procuring equipment and employing specialists to carry out these tasks. Initial revenues allocated under NT2 to MAF are likely to be used for debt repayment but these will not materialize for several years. Since no separate financing plans appear to be available at the central or provincial levels, the medium-term expenditure needs to assess the size of the liabilities and incorporate a schedule of debt repayment.

V. Conclusions

157. Laos has made commendable progress with agricultural growth and this has contributed to significant rural poverty alleviation over the past decade. However, in recent years, the link between agricultural growth and rural poverty reduction has weakened, and both have slowed. How to maintain high agricultural sector growth rates and achieve good welfare and equity impacts with this growth remain important challenges for economic policy and management. This Paper has highlighted a number of issues that are likely to be central to meeting this challenge.

158. Improving farmer productivity. There is good potential for increasing physical productivity on the small household farms which predominate in Laos. This will come from moving to higher yielding but also higher risk techniques that farmers will adopt as market links and competition grows (see next). Increasing productivity on farm will also lead some farmers to diversify away from rice (while rice production still has the potential to intensify and meet national food security needs) in areas of good comparative advantage, and this will lead, on a spatial basis, to greater specialization in agricultural outputs in different parts of the country.

Issues – (i) uplands: there is long-term potential for mixed farming based on perennial crops, fruits and vegetables, specialty crops and livestock, but what will be the paths of transition from swidden farming systems? Swidden farming systems in different parts of the country, because of different agronomic endowments and external economic forces, are likely to face different prospects and paths of evolution and sustainability. The Government, with donor partners, needs to focus on improved livelihood based approaches to income diversification, tenure and credit improvement and agricultural stabilization appropriate for each type of swidden system; (ii) the institutional capacity for agricultural research and extension, particularly in the public sector, is limited: as a small country, and with limited current capacity, Laos has some options for relying on R&D outside of its own public sector. The emphasis should be on adaptive research. Extension is currently doing well to focus on a “multiple-provider” approach which mobilizes all capacities including those beyond the public sector, such as through contract farming, suppliers, and NGOs.

159. Linking farmers to markets. Infrastructure, information, risk management and encouragement of market competition are all fundamental to ensuring that farmers have options and clear market signals when producing for market sale. The growth of market orientation will permit farmers engaged in less productive (and therefore less remunerative) rice production to shift to more profitable crops, particularly in the uplands, as the domestic rice market becomes better integrated (especially spatially) and reliable (seasonally and in price stability).

Issues – (i) a forward-looking strategy for increasing the pace of rural road development is moving toward completion in 2006, but for it to be implemented, a range of issues will need attention, such as the designation of village cluster centers, choices across rural roads and other levels of the national road system in investment prioritization, the approach to take on community roads, and strengthening of rural road capacity within central and sub-national government; (ii) it makes sense to improve transport links of farmers in some poorer areas to the closest markets, which may well be across borders in Vietnam, Thailand, and China, but there are trade-offs in view of nation-building considerations prioritizing the domestic road network and market integration; (iii) contract farming that links farmers to processors/traders is emerging as a channel for providing small farmers with more assured access to markets, especially for higher value and more perishable agricultural production. There remains a public sector role to provide for a healthy and non-exploitative contracting environment, to facilitate respecting of contract terms,

and assisting farmers to organize to improve their bargaining position; (iv) accessing cross-border agricultural markets confronts the limited current capacity in sanitary and phyto-sanitary regulation. What are the SPS priorities and what regulatory model should the public sector pursue? There may be significant advantages for Lao to pursue regional cooperation, and handling of some SPS needs and threats on a cooperative basis with neighbors may be more efficient than attempting to control all aspects at Laotian borders. SPS functions may also best be delegated, through public-private partnerships, for some agricultural products.

160. Capturing value added opportunities. Lao value chains beyond the farm gate need to be deepened. The “thinness” of the private sector in rural areas, particularly in agricultural product processing and marketing, is striking, and it is important to clarify what is impeding the development of this.

Issues – (i) what is the appropriate role of the Government while “awaiting” the emergence of the private sector? Will it need a stronger collaborative approach, with the government consulting and exploring what constrains private sector partners (e.g., analysis of the rural investment climate and the business environment)? (ii) Lao-produced raw agricultural products are often transported across border for processing in neighboring countries. What are the priorities for facilitating installation of such value-adding enterprises on Lao soil? How severe are Lao cost disadvantages (e.g. interest costs of capital) and the disadvantage of being a “second-mover” in the regional market? (iii) Laos is land rich, and there is already a growing dynamism in some rural areas as commercial agricultural investors, including foreign, seek access to blocks of land for plantations such as rubber. Government needs to put in place adequate social and environmental safeguards to ensure that these privately lucrative opportunities are properly assessed on national priorities and that where approved, mitigation measures are defined and pursued.

161. Migration. Movement of rural people appears to have a significant impact on poverty outcomes. External migration, particularly to Thailand, appears to predominate at present, but there is also welfare improving internal migration, on a voluntary basis, even within the agricultural sector and rural economy. Apart from the draw of urban economies, a thriving and diversifying lowland agriculture is likely to go through a phase of labor absorption, and even uplands can provide opportunities for job creation (the example of coffee expansion in the Vietnam central highlands illustrates this) that will accompany shifts to comparative advantage in perennials.

Issue - not enough is known at present about internal migration and better information and analysis are needed. Attention is warranted to government statistical and analytical capacity in this area.

162. Public Expenditures. Building the capacity to apply public budget resources in the most effective way to address these challenges will remain a high priority. Ability to address current weaknesses in public budget management will be particularly beneficial for the best claim to be made that part of the additional resources arising from NT2 flows to the public budget should be allocated to agricultural sector development.

Issues - strengthening of public budget management in the agricultural sector is needed, and prioritization needs to assess the balance of effort across: (i) integration of foreign/donor resources into national budget planning and management; (ii) improvement of information systems’ capacity to inform central authorities on the expenditure levels and patterns of sub-national authorities on agricultural activities; (iii) rebalancing of expenditures towards recurrent

costs, particularly of operation and maintenance, to ensure the effective use of public investments; (iv) for the irrigation investments that continue to predominate, getting arrears under control is an immediate need. Other issues are getting a better spatial distribution of irrigation investments, and also managing a gradual shift away from the current dominance of irrigation investments so as to free resources for other public sector investment needs in agriculture.

These issues are faced by other sector ministries, and overcoming them will require a coordinated effort directed by the central Ministry of Finance (and the Committee for Planning and Cooperation). MAF needs to make sure that it is at the center of the public budget reform and capacity-building process.

163. The Government is actively engaging donors to assist it to learn from its own experiences in charting the best way forward on this array issues. The Ministry of Agriculture and Forestry, with its expanded mandate to encompass rural development strategy, is coordinating the support of international partners on this learning process, and in early 2006 suggested a preliminary list of key areas collaborative analysis. The topics encompass irrigation, uplands development, agribusiness/market deepening and livestock, microfinance and biodiversity conservation. The World Bank supports this endeavor and is committed to bringing its experiences in Laos and elsewhere to the process. Based on the World Bank's ongoing activities in Laos and the orientation of this Paper, topics on which it is most able to contribute are uplands, agribusiness and marketing (and rural investment climate more broadly) as well as biodiversity. It can also assist building into the assessments two related elements that are likely to be important: public expenditure management, and its context of decentralization, and also forestry including its relation to uplands and biodiversity management. Consultations with Government and other partners on this Paper are intended to help guide and focus the World Bank in its commitments to contribute to progress on these core development issues for Lao rural development.

References

Asian Development Bank (2001). Participatory Poverty Assessment: Lao People's Democratic Republic. December.

Foppes, Joost (2003). The role of Non-Timber Forest Products in Community Based Natural Resources Management in Lao PDR. SNV-The Netherlands Development Organisation.

Gender Resource Information & Development Center (2005). Lao PDR Gender Profile. November.

Global Development Solutions (2005). Integrated Value Chain Analysis of Selected Strategic Sectors in Lao People's Democratic Republic. Draft working paper prepared for EASRD, World Bank.

International Organization for Migration (2005). Migration, Development and Poverty Reduction in Asia. October.

Lao PDR, Ministry of Agriculture and Forestry, National Agricultural and Forestry Extension Services (2005). Consolidating Extension in the Lao PDR. Laos Extension for Agriculture Project (LEAP). January.

Lao PDR, Ministry of Agriculture and Forestry, National Agricultural and Forestry Extension Services. Farming Systems Research in the Rain-fed Lowland Environment, NAFRI National Rice Research Program and Lao-IRRI Project. April

Lao PDR, Ministry of Agriculture and Forestry, NAFRI, NAFES and NUOL (2005). Evolving Operational Upland Policies by Paper 4, in "Improving livelihoods in the Uplands of the Lao PDR".

Lao PDR, Ministry of Agriculture and Forestry, Forestry Strategy to the Year 2020 (FS 2020) of the Lao PDR. April.

Lao PDR, Ministry of Agriculture and Forestry, (2005). NGPES Costing Report. Department of Planning.

Lao PDR, Ministry of Communication, Transport, Post and Construction (2006). Development of a Rural Transport Infrastructure Policy for the Lao PDR. Draft Final Report, Volume 1. Prepared by LanXang Interntanal with the MCTPC Working Group. March.

Newton, John (2005). Commercial Potential of Lao Agriculture. Draft working paper prepared for EASRD, World Bank.

Pandey, Sushil & Sanamongkhoun, Montry (1998). Rainfed Lowland Rice in Laos: A Socio-economic Benchmark Study.

Thomas, David E. (2003). A Brief Review of Upland Agricultural Development in the context of Livelihoods, Watersheds and Governance for area-based development projects in the Lao PDR. World Agroforestry Centre. September.

Warr, Peter (2005). Road Development and Poverty Reduction: The Case of Lao PDR. ADB Institute Discussion Paper No. 25. February.

Warr, Peter (2005). Rural Development and Poverty Reduction: The Case of Lao PDR. February.

Weatherhogg, John (2005). Legal, Regulatory and Policy Aspects of the Agriculture Sector. Draft working paper prepared for EASRD, World Bank.

World Bank (2003). Ethnic Groups, Gender, and Poverty Eradication: Case study from a Khmou Lue community in Oudomxay Province.

World Bank (2005). Lao PDR: Rural Poverty – Trends and Profile. Background Paper for the Lao PDR Poverty Assessment.

World Bank (2005). Diagnostic Trade and Integration Study. Draft